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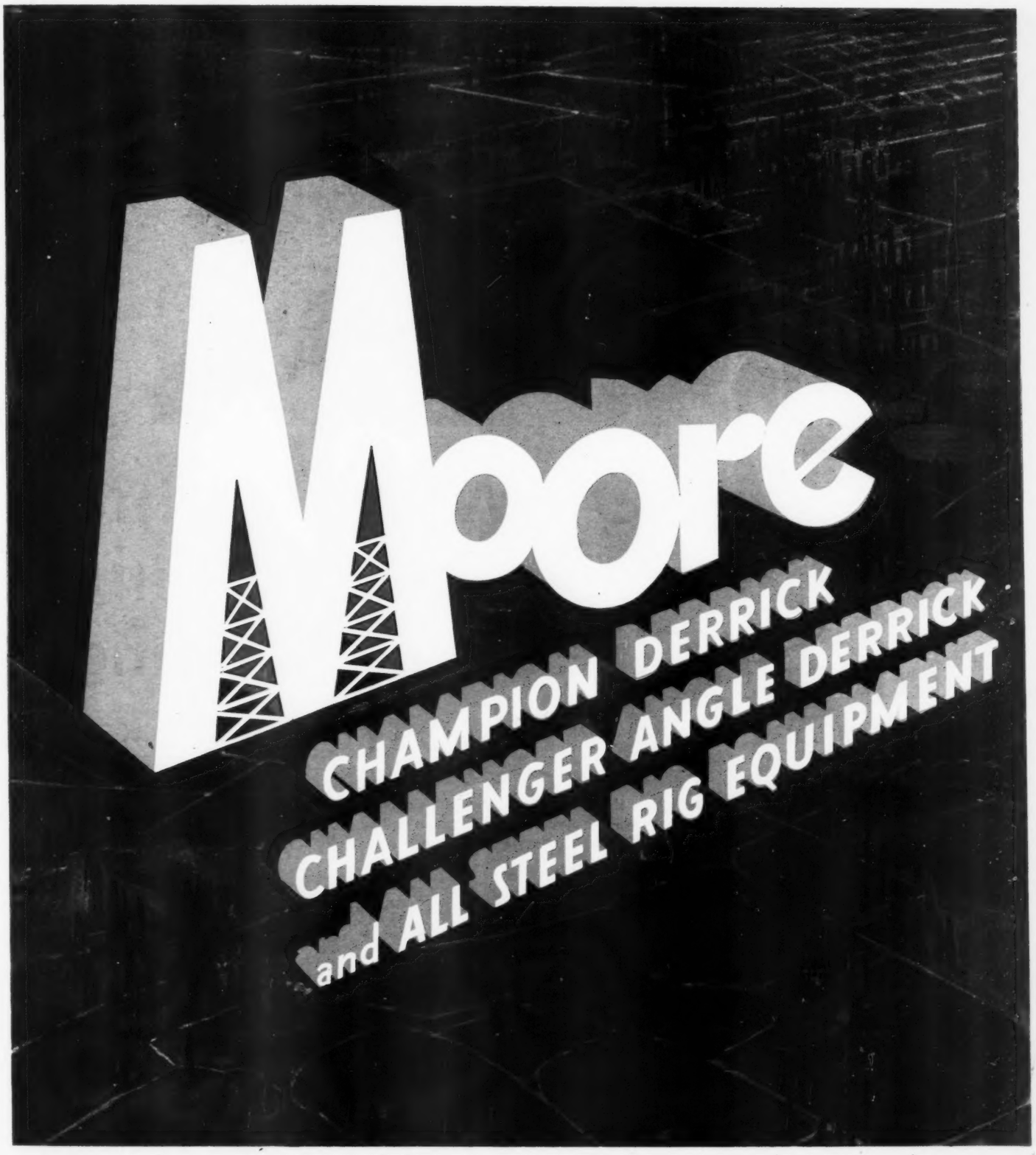

Advertisers' Index on Page 29

Table of Contents on Page 30

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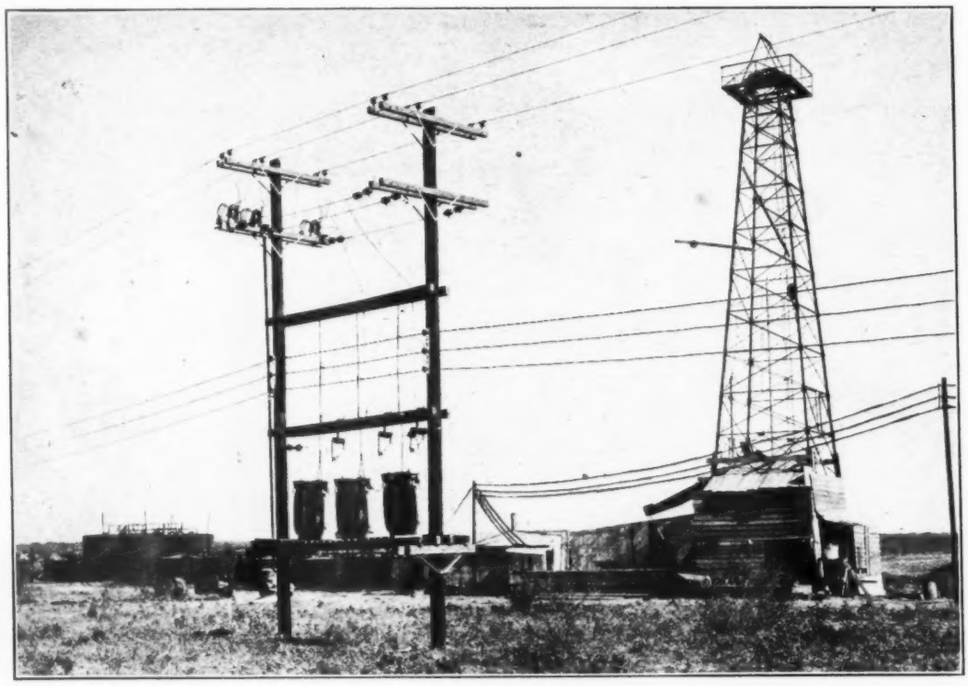

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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

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Table of Contents

SPECIAL ARTICLES

Crude Curtailment Programs in Danger 31
By Andrew M. Rowley
Opponents of Proration Given Hearing 33
By Robert C. Conine
Gasoline and Lubs by Hydrogenation 34
By R. T. Haslam and W. C. Bauer
Operators Working for Embargo 35
By Charles E. Kern
Plan Gasoline Pipe Lines Along East Coast 35
By A. E. Mockler
Current Oil Well Cementing Practice 36
By C. P. Parsons and T. H. Rakestraw
Producer Offers Suggestions for Operators 36
High Cost of Keeping Oil in Storage 37
By James McIntyre
Concrete Storage Must Be Impervious 37
By John F. Hough
Several Refineries in Oklahoma City 38
By Robert C. Conine
The Pillory of Politics (Editorial) 40
Determining Gum Content of Gasolines 42
By Oscar C. Bridgeman and Elizabeth W. Aldrich
Senator Nye Asks Oil Investigation 44
Pipe Line Construction News 64
Significance of New Specifications 68
By S. S. Smith
Pictured by Journal's Camera 74
Field Problems and Their Solution 84
Edited by Thomas F. Smiley
Allowable Production in Texas Reduced 169
A.I.M.E. Program 198
Decline in Argentine Production 199

ANNUAL REVIEW

Encouraging Factors for 1931 86-87
By W. T. Anderson
Production in 1930 Was 901,740,870 Bbls. 90
By James McIntyre
Low Quotations on Refined Products 91
By C. O. Willson
New Initial Production Mark in 1930 94
By James McIntyre
Gasoline Tank Wagon Prices at New Low 95
By R. C. Conine
Gasoline Tank Wagon Price Table for 1930 98
Oil Had Hectic Year in California 99
By L. P. Stockman
North Texas and Panhandle Hit Hard 102
Rusk County May Be Largest Oil Field 106
By L. E. Bredberg
Oklahoma's Flood of New Production 107
By W. A. Spinney
Market Price of Crude and Fuel Oil 118-119
Kansas Had Great Revival 122
By W. A. Spinney
No New Major Pools in West Texas 126
By L. E. Bredberg
General Slowing in Central West 127
By George A. Whitney
New Southwest Texas Pools 128
By B. D. Stevenson
Gulf Coast's New Production Record 130
By Neil Williams
Important Oil Lines Laid in 1930 136
Vast Mileage of Gas Lines in 1930 138
Long Lines to Transport Gasoline 139
Map of West Texas Lines and Refineries 140-141
Graph of Crude Oil Prices 145
Rocky Mountain Development in 1930 150
By Tolbert A. Ingram
Production Increased in Canada 154
Michigan Operations in 1930 156
By Paul A. Elliott
Gas Led in Louisiana 159
By D. H. Bancroft
Kentucky Pools Developed Slowly 163
Curtailment in Eastern Fields 163
Exports Affected by Market Changes 179
By A. E. Mockler
Motor Vehicle Registration in 1930 183
California Gasoline Shipments Decline 209
Year of Low Prices on East Coast 212

FIELD OPERATIONS

Late Fields 44
Oklahoma, *By W. A. Spinney* 45
Gulf Coast, *By Neil Williams* 46
Kansas, *By W. A. Spinney* 48
North Louisiana-Arkansas, *By D. H. Bancroft* 50
Southwest Texas, *By B. D. Stevenson* 52
Rocky Mountain Area, *By T. R. Ingram* 54
Canada, *By Victor Lauriston* 54
California, *By L. P. Stockman* 58
Michigan, *By Paul A. Elliott* 60
East Central Texas, *By L. E. Bredberg* 61
North Texas and Panhandle, *By L. E. Bredberg* 62
West Texas, *By L. E. Bredberg* 66
Central West, *By George A. Whitney* 72
Kentucky, *By George A. Whitney* 72
Eastern Fields, *By Staff Correspondent* 85

DEPARTMENTS OF GENERAL INTEREST

The Advertisers' Index 29
Personal Paragraphs About Oil Men 76
Oil Industry Equipment and Supplies 78
Natural Gas Developments 133
Classified Want Advertisements 184-185
Oil Securities Market 196-197
Crude Petroleum Statistics 232

REFINING AND MARKETING

Few Changes in Refinery Quotations 32
By C. O. Willson
Technical Questions Answered 82
By C. K. Francis, Ph.D.
Tank Wagon Quotations 184
Gasoline in Fair Demand in Chicago 186
Definite Improvement on East Coast 187
Brief Items for Petroleum Refiners 189
Natural Gasoline Manufacture 190
Refinery and Crude Prices 192-193
Of Interest to Sales Departments 210

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Refinery Section Starts on Page 186

Crude Curtailment Programs in Danger

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Uncertainty Intensified by Efforts to Increase Allowable Production in Oklahoma and East Texas Developments

By Andrew M. Rowley

Lowest daily average crude oil production in United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

Continuance of crude oil production curtailment programs in the United States depends largely upon the outcome of the hearing being held this week in Oklahoma City on the petition to increase the allowable output of the Oklahoma City Pool and what Texas operators do in the matter of restricting development in the large area in East Texas recently proved productive. The effect of "tilting the lid" anywhere will be cumulative. Operators at Oklahoma City who have a market for more crude than they are permitted to produce under existing schedules cannot expect owners of offset properties to operate these properties at the present rate if the allowable is increased. The result would be a greater production than market requirements unless ratable takings are provided.

The situation in Texas is complicated by reason of discoveries in East Texas which may develop into one of the largest fields, in area at least, in the country. Small holdings in this territory add to the difficulties of arriving at a satisfactory plan for curtailing production there.

Uncertainty regarding the general situation is intensified by agitations among both Federal and State politicians for "investigations" and additional legislation affecting different phases of the petroleum industry. It certainly is time for those recognized as leaders of the industry to take a determined stand upon all questions which affect the welfare of the oil business and to take steps at once to correct the evils which have resulted in the present situation.

This column has contented all along that reducing the price of crude oil has not and will not correct the matter of small refiners selling gasoline under the market. Let the industry absorb the distress crude oil production which, at the most, is but a comparatively small quantity especially in view of the fact crude oil has been coming out of storage. Then raise the crude oil price schedule and reduce the spread between the refinery and tank wagon prices of gasoline. Retail prices of gasoline need not be increased but the entire industry would be getting a part of the profits now being absorbed by jobbers who have but very little invested in the oil business.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended January 24 and a comparison with the previous week follows:

	Jan. 24	Jan. 17
Oklahoma—		
Oklahoma City	84,830	70,315
Seminole-St. Louis	155,050	156,945
Remainder of State	226,660	213,625
Total Oklahoma	466,540	440,885
West Texas—		
Hendricks	49,160	51,885
Yates	95,691	93,076
Remainder	100,006	93,541
Total West Texas	244,857	238,502
North Louisiana	40,390	40,545
Arkansas	50,665	51,000
North Central Texas	87,243	97,197
Texas Panhandle	58,405	57,706
East Central Texas	45,243	43,969
Kansas	106,945	107,410
Total Mid-Continent area	1,100,288	1,067,154
Gulf Coast	180,558	183,057
Southwest Texas	84,906	86,118
Eastern	108,000	108,000
Rocky Mountain area	98,860	98,168
California—		
Santa Fe Springs	71,250	71,750
Long Beach	92,000	93,000
Playa Del Rey	36,000	36,000
Elwood	32,750	37,500
Ventura Avenue	43,500	44,000
Kettleman Hills	21,500	21,500
Remainder of State	235,000	234,000
Total California	532,000	537,750
Total United States	2,104,612	2,080,247

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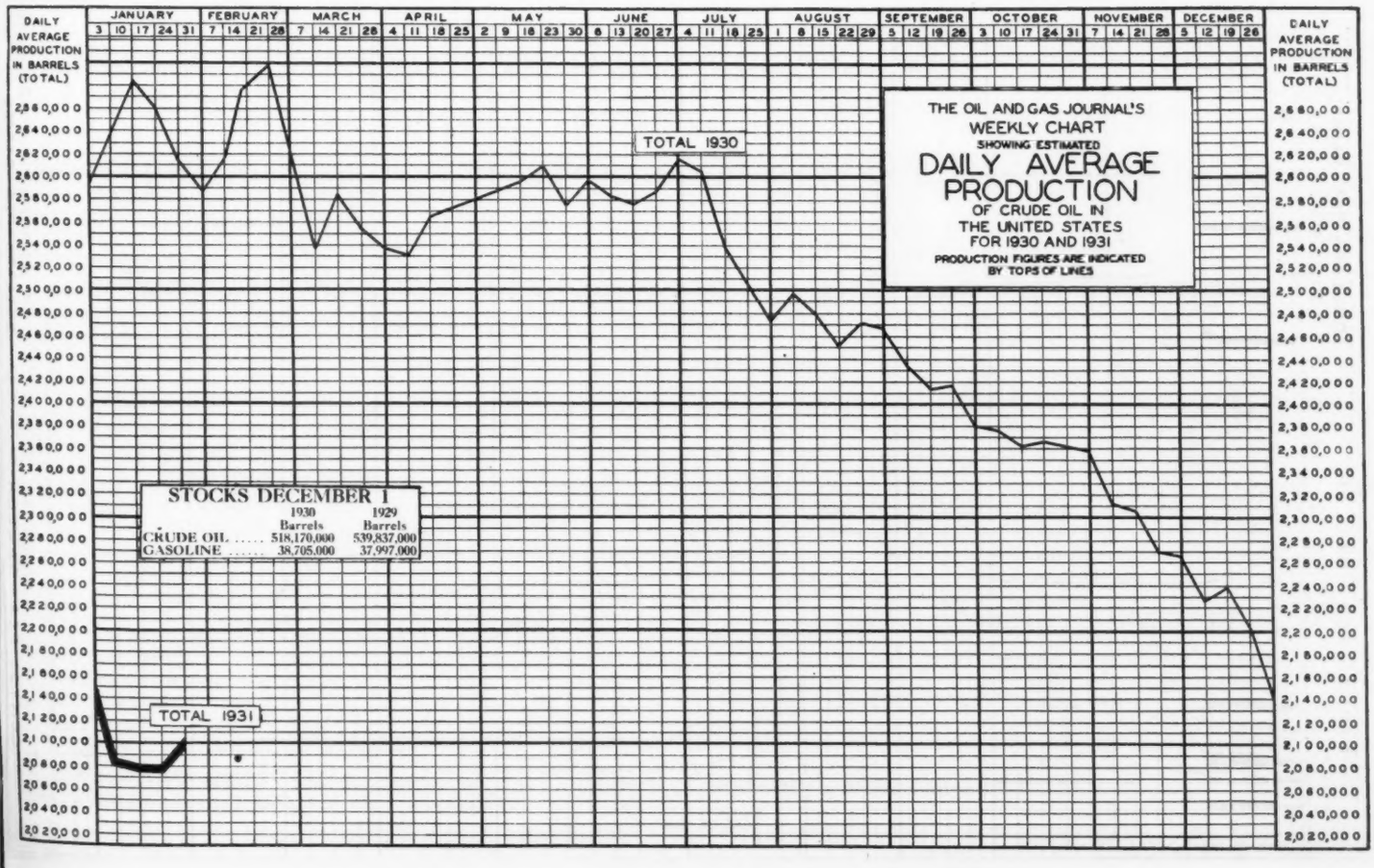


Few Changes in Refinery Quotations

Market Awaits Developments in Crude Oil Situation. East Texas Development Important Factor in Future Mid-Continent Trend

By C. O. Willson

With considerable uncertainty again regarding the probable future trend in crude oil prices, the refined market in Oklahoma (Group 3) and other Mid-Continent areas did no better than hold its own the past week following a half month period in which several products showed strength.

The fear that the bringing in of new fields and the liberalization of proration agreements in flush pools may result in excess crude oil supplies starting immediately has temporarily at least stopped a recovery which promised early in the month to place the refining industry on a more favorable price basis. The feeling of uncertainty was reflected in a few refiners offering to sell gasoline over February at present prices. Buyers have sensed the possible weakness and are not buying as actively as they were the first 15 days of January despite the fact that weather conditions in the consuming territory have been favorable for a large retail demand.

The jobber buying earlier in the month, supplemented by purchases of approximately 500 cars of U. S. Motor gasoline by the Standard Oil Co. of Indiana, has placed many refiners in a favorable position so far as January production is concerned. It is known that the Standard of Indiana and at least one other large company have made inquiries relative to February purchases from Mid-Continent refiners. So far as known no actual sales have been made and it is now assumed that these buyers will await developments over the remainder of the month before placing orders. In this connection those in close touch with the refinery situation believe that Mid-Continent refiners can expect purchases similar to that of the Standard of Indiana over the next few months provided stable conditions are maintained and refinery operations are not expanded so that excessive quantities of gasoline and other products are thrown on the market. It is felt that several of the larger companies operating major refineries in other areas will be willing to buy gasoline from time to time to aid the Mid-Continent open market and thus minimize the importance of small quantities of distress material in the hands of small refiners which last year contributed materially to the general decline in prices.

Among the other products, few price changes were noted during the week. The furnace oils are sluggish, due to warm weather in the middle western and northern states and prices on some grades are one-eighth to one-fourth cent lower. Among the heavier grades of fuel oil, the demand for zero cold test grades continues fair but high cold test material is moving slowly. Due to steady buying, Grades BB and C of natural gasoline advanced and on Tuesday the BB grade was selling one-fourth cent under the prevailing 3½-cent level for Grade AA. There were more inquiries for wax and one refiner is reported to have sold 600 tons for February delivery.

Importance of Crude

Those who attempt to foretell the trend in refinery prices are again spending most of their time watching developments in the Mid-Continent crude oil situation. As has been explained in these columns since the first of the year, most market students feel that the refinery situation, considered from the current statistical angle, including storage, is in better shape than it was at any time last year. Provided the same situation obtained in crude oil supply and demand, this would mean a gradual recovery in prices.

In regard to crude oil it seems impossible to get away from the "ifs" in the situation, the favorable factors being constantly threatened with new proration agreements and new fields. The proposal to increase the production in the Oklahoma City Pool, which at this writing was still under consideration, has not helped the refined market. Increasing the production will enable several small refiners in the State to start their plants and expand those already in operation. The major buyers will have to increase their purchases and this presumably would force them to expand the operations of large refineries located outside the Mid-Continent but which compete with Mid-Continent refiners in the sale of their products. Any substantial increase in the crude oil production of

(Continued on Page 191)

REFINED MARKET BAROMETER

Prices on refined products were generally steady in practically all the refining groups. Many operators have curtailed their plant operations to the point that a temporary lull in demand for one or more products does not result in sales being made at distress prices. In the eastern states and many other parts of the country efforts are being made to stabilize gasoline refinery prices at present levels until later in the season when it will be possible to determine price trends over the remainder of the year. Uncertainty as to the crude oil situation continues to be a dominant factor in the market for all the principal refined products. Some grades of natural gasoline advanced in the Mid-Continent. Kerosene quiet. Fair demand for fuel oils reported from several areas. Lubricants weak. More activity in wax.

Mid-Continent—Prices generally holding to levels of previous week except some grades of furnace oils which are weak. Fear of surplus crude oil disturbs gasoline market with low quotations for future shipment. Kerosene slow. Low cold test fuels firm with little demand for high cold test grades. More active demand for wax.

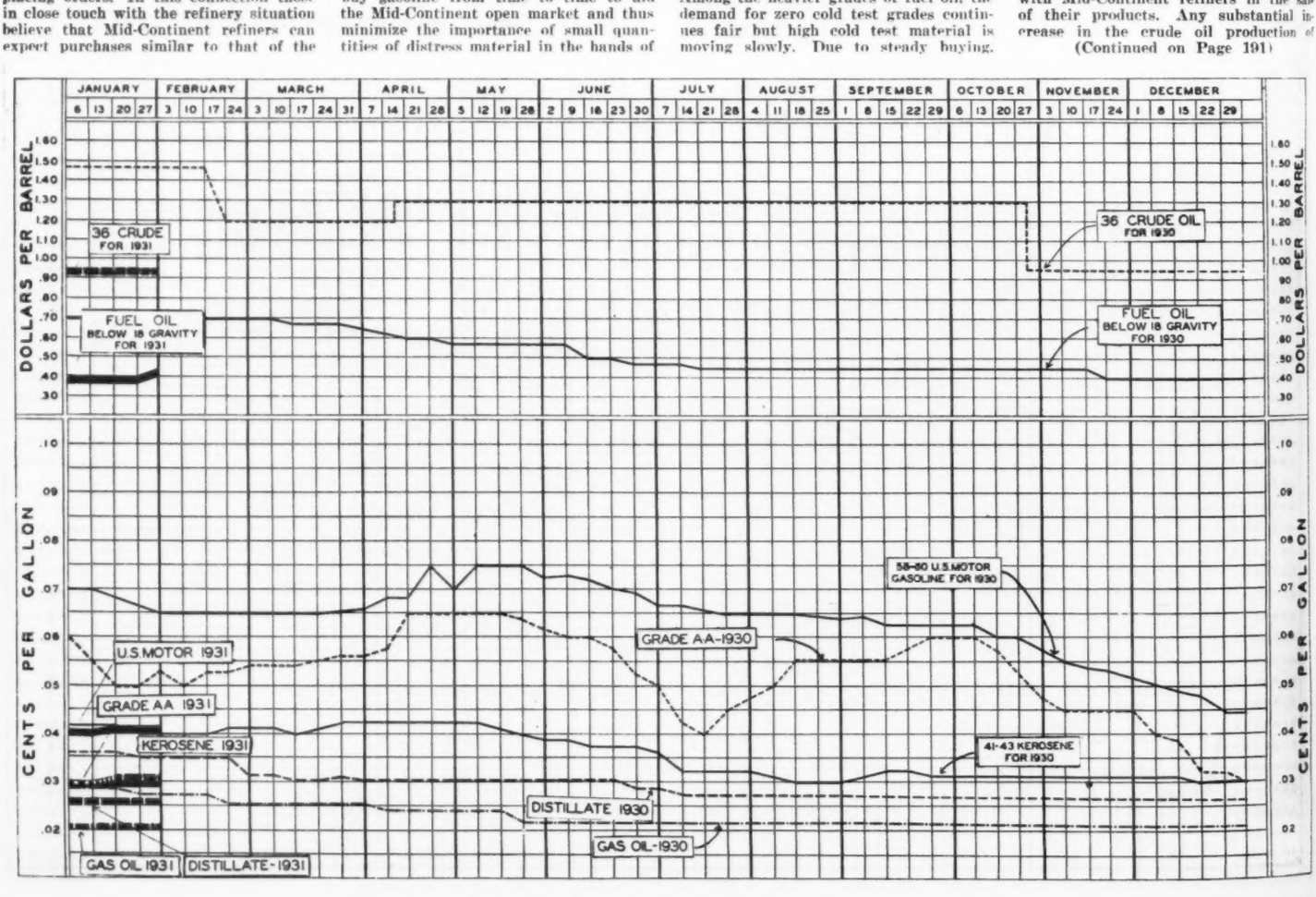
East Coast—Definite improvement in gasoline market with predictions of higher prices. Kerosene steady. Higher prices on some grades of wax. Cylinder stocks unsettled. Good demand for gas oil and Diesel oil.

Pennsylvania—Market quiet with no important changes in prices.

Chicago—Fair gasoline demand at steady prices. Kerosene movement slow. No large orders for fuel oils. Good demand for gas oil. Furnace oil demand slow due to warm weather.

Gulf Coast—Prices steady. Few new orders for fuel oil.

California—Gasoline prices steady with less price cutting reported in tank wagon and retail market. Other products unchanged.



Opponents of Proration Given Hearing

Governor Murray of Oklahoma States His Position in Interview for The Oil and Gas Journal. Committee to Report Thursday

By Robert C. Conine

OKLAHOMA CITY, Okla., Jan. 27.—Although Gov. William H. Murray of Oklahoma has appointed a committee of nine to advise him in the matter of remedial legislation in connection with the oil situation in the State, the governor wants it to be understood that he has no intention of letting the committee of oil men make any final decision.

The governor is also interested in the hearing now before the Corporation Commission in which the present proration schedule in the Oklahoma City Field is being attacked and defended.

Governor Murray, who called upon the nine men for information because he himself knows nothing about the oil business, has not been slow in acquainting himself with the salient points involved. In an interview given to The Oil and Gas Journal Tuesday the governor wished to clear up some misunderstandings which he said had been published in the newspapers.

"I look to the committee of oil men I have appointed," Governor Murray said, "for suggestions. I may accept their recommendations and I may not. They probably know what is best for the oil business as an industry, but I know what is best for the people.

Studied The Oil and Gas Journal

"Before appointing the committee I began to inform myself about the oil situation. I bought a stack of The Oil and Gas Journals and have studied them closely and I feel that I shall not be altogether at a loss when the oil men discuss the problems faced by operators in the fields of the State.

"I have spoken to various pipe line owners suggesting the possibility of their increasing their takings by 3 or 5 per cent. I have also," the governor continued, "asked the Corporation Commission to make an investigation to ascertain whether or not the production from the Oklahoma City Field could be marketed if the per cent of potential permissible should be raised to 10 per cent. I shall take the report on their investigation into consideration along with the recommendation of the oil committee.

"No one is more aware of the danger of allowing the wells in the Oklahoma City Field to produce their limit than I am. I can readily see that this would not only destroy the field physically but also economically. No half-baked ideas or extravagances will get by me, so don't look for radical development.

"Finally, I want to point out that in naming Mr. Owens chairman of the oil committee I provided also that the committee itself hold an election to name another chairman in Mr. Owens' place if they desired. My intention was solely to place a man at the head who could not be considered an object of favoritism."

Hearing by Commission

In the second day of the Corporation Commission hearing on proration, Tuesday, Frank Burford, counsel for the Indian Territory Illuminating Oil Co. and others defending the present ruling, cross-examined witnesses brought by the opponents of proration of 1.2 per cent of potential. Mr. Burford laid stress on the contention of the advocates of proration that no new demand can be found for oil from the Oklahoma City Field.

"The Oklahoma City Field," Mr. Burford said, "has never taken as much oil as is permitted by the proration order of any past periods. If the operators want to co-operate they will pool their production to meet a market which they claim is available."

The hearing before the corporation commission was upon the prayer of Wirt Franklin, president of the Wirt Franklin Oil Corp., and others who seek a revision of the present proration order operating in the Oklahoma City Field to allow a flow of 10 per cent of the potential, instead of the 1.2 per cent of potential effective since January 3.

The predominant viewpoint among those producers who are urging larger allowable takings was expressed in the charges of Mr. Franklin that an intentional diversion of the market served by the Oklahoma City Field has been under way for some time under guidance of unnamed pipe line companies and purchasers, and that the increasingly stringent proration regulations since early in 1929, were serving the ends of those who wish to destroy the Oklahoma City Field. Mr. Franklin wished it to be understood that he did not condemn the corporation commissioners as their rulings had always been given fairly on the evidence available.

"Early in 1929," Mr. Franklin testified, "the Oklahoma City Field was producing and marketing 735,000 bbls. of crude oil daily at $1.45 a barrel. When proration measures cut the production in the United States by 900,000 bbls. daily, we found that Oklahoma had borne one-third of this reduction.

"If we sit by passively we are going to see the total production of the state cut down to 200,000 bbls. daily, and those who will be favored in the discrimination against Oklahoma crude oil will be not only producers in other states, but also those in foreign countries. If the pipe line companies and the purchasers who are wresting the market from Oklahoma had holdings in the Oklahoma City Field we would not be in our present predicament."

Wirt Franklin's Testimony

In his testimony on the effects of proration as practiced in this field, Mr. Franklin said that all of the lime wells were being ruined by the encroachment of salt water and loss of gas energy as the result of reducing the allowable takings to 1.2 per cent of their potentials. In the case of sand wells, Mr. Franklin stated that these too, were beginning to show, in a lesser degree, similar losses in oil and gas. Sixteen lime wells and 200 sand wells are approaching ruin, he said.

In both cases Mr. Franklin had reference to those wells which have permitted a connection between the oil-bearing sand and the upper gas-bearing stratum. He admitted freely that for these wells the remedy was not an increased allowable taking, but recasing and cementing to separate the oil and gas-bearing bodies. He estimated that each well could be so repaired at a cost of $10,000 in 30 days' time, pointing out that if a well was worth $125,000 to drill it would be worth this amount to save.

The mechanics of the process of destruction in the sand wells, as explained by Mr. Franklin, are as follows: In some places in the Oklahoma City Field the sand body overlaps the lime and water from the latter stratum encroaches upon the oil in the upper lying sand. If the dry gas sand is not cemented off the oil which is forced up by the water will be quickly absorbed by the gas sand and lost forever.

When called to the witness stand after the noon recess, Mr. Franklin testified that the precarious condition of the wells requiring recasing has been aggravated by the proration schedule.

Although it has been expected that the corporation commission would be petitioned to permit allowable takings of 10 per cent of potential, Mr. Franklin said that the production of the field should be increased gradually and asked that the

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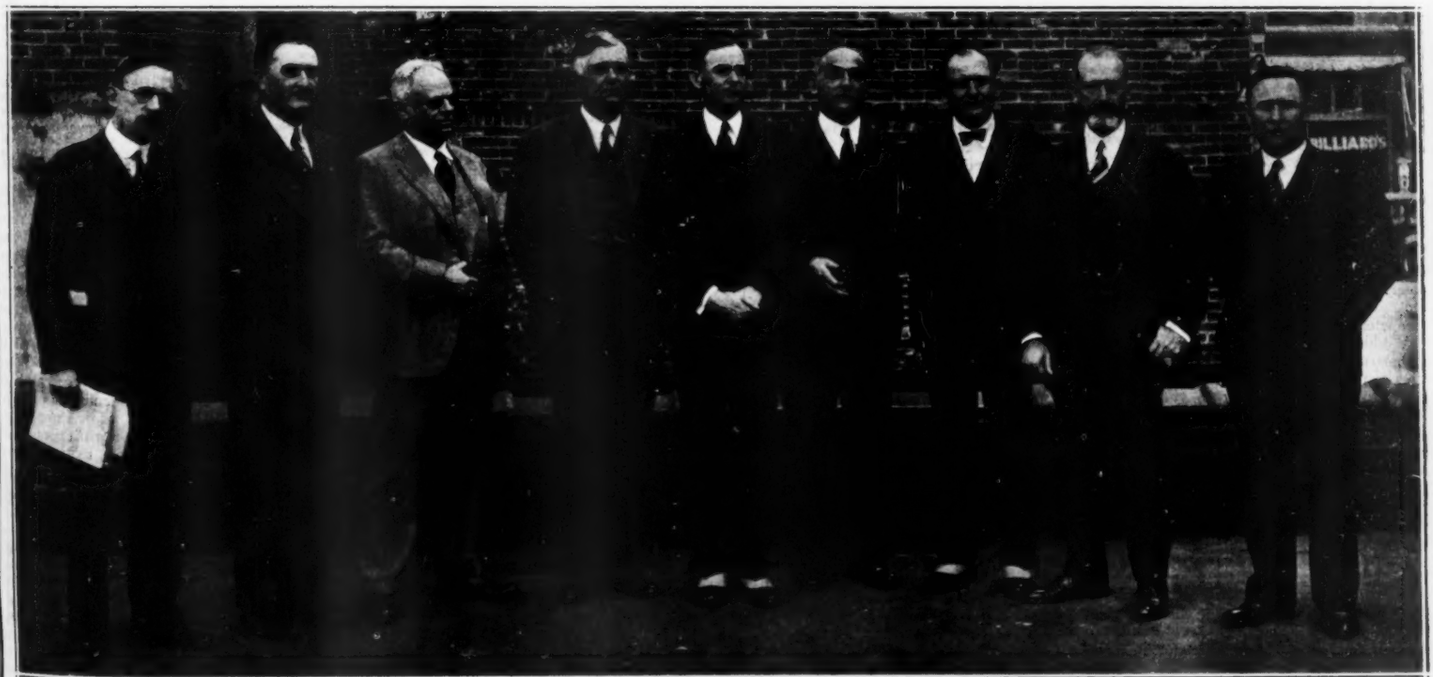
OKLAHOMA GOVERNOR'S COMMITTEE ON OIL LEGISLATION



Left to right: Roy M. Johnson, independent operator, Ardmore; Wirt Franklin, president, Independent Petroleum Association of America, Oklahoma City; H. H. Champlin, Champlin Refining Co., Enid; E. B. Howard, president, Oklahoma Oil Association and former congressman from Tulsa; C. A. Owens, retired oil operator and chairman of the governor's committee, Los Angeles, Calif.; E. B. Reeser, president, American Petroleum Institute, Tulsa; Pat Malloy, special counsel of Sinclair Oil & Gas Co., Tulsa; W. N. Davis, vice president, Phillips Petroleum Co., Bartlesville; and W. R. Ramsey, Ramsey Petroleum Corp., Oklahoma City.

Gasoline and Lubs By Hydrogenation

Investigations Demonstrate Practical Operating Characteristics of Products Secured in New Manufacturing Process

By R. T. Haslam and W. C. Bauer
Standard Oil Development Co.*

Both from an engineering and from an economic standpoint the automotive industry rests upon liquid hydrocarbons of two types, the fuel and the lubricant. Possible substitutes for both are recognized, notably the alcohols as fuel and the fatty glycerids as lubricants. Technically these and other substitutes are of interest, but commercially they are of no primary significance since hydrocarbons alone appear to be presently and potentially available in the required volume. Acceptance of this hypothesis led to the pioneer efforts to synthesize hydrocarbons from coal and water. The principles and the practical application of this synthesis have been the subject of a great program of industrial research and development initiated in Germany by the Interessen Gemeinschaft Farbenindustrie Actiengesellschaft and later carried forward co-operatively by the initiators and the Standard Oil Co. (New Jersey). That the field of the program covered not only the direct production of these hydrocarbons but also the whole subject of the constitution of the petroleum-hydrocarbon

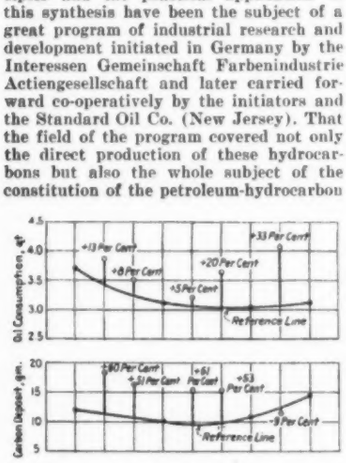


Figure 1—Comparative 50-hour tests of hydrogenated and natural lubricating oils on a White motor truck engine. These tests, which were made on a four-cylinder engine, indicate that, with a conventional low-speed engine which does not develop excessive crankcase oil temperatures, the lubricants produced by the hydrogenated process had a lower oil consumption than paraffin base Pennsylvania oils and a carbon deposit that was comparable with that of coastal stocks.

molecules was soon recognized, and from this point on it might properly be called the study of formation and reformation of the liquid hydrocarbons.

In this broader light the research became of importance to automotive engineers since it opened the possibility of not only the production of hydrocarbons generically to increase the available supply but also controlling or altering the constitution and properties of the synthetic products as well as hydrocarbons of natural origin to obtain that type of molecular structure which best lends itself to the requirements of the automotive industry. This paper deals with the latter aspect of the development.

Utilization and Object

The result of this program has been the perfection to the point of initial commercial operation of a process known generically as the hydrogenation process. Although the process has many variants and other uses, those to be considered here are the production of gasoline and lubricants with particular reference to the properties of the products. The process, as at present applied to these uses, consists briefly in pumping the charging stock, together with hydrogen compressed to between 3,000 and 4,000 pounds per square inch, through heat exchangers and a heating coil into reaction vessels containing a highly active sulphur-resistant catalyst. The oil and hydrogen flow through these reaction chambers where hydrogenation occurs, then back through the heat exchangers and coolers and into vessels that separate the gas from the liquid product. The hydrogenated oil is now ready for final distillation or finishing by regular refinery procedure.

According to the conditions of this hydrogenation treatment and the nature of the catalysts employed, the chemical reactions that occur alter their direction and extent. Three characteristic reactions remain unaltered in direction, however, changing only in extent in all cases. The first of these reactions is a species of purification, which has been called by Ellis[1] hydrocarbonization and is defined as the tendency to eliminate from the liquid production of the reaction everything save hydrocarbons. The alien elements, nitrogen, oxygen and sulphur, present in natural hydrocarbons and bitumens are preferentially attacked by the hydrogen so vigorously that they leave the reaction zone as the corresponding gaseous hydrides. Thus, the first and universal result of the hydrogenation process, as regards the character of the products obtained, may therefore be said to be chemical purity. A hydrogenated oil is always a very near approach to a chemically pure hydrocarbon mixture.

The second characteristic reaction is that of stabilization. The hydrocarbons that emerge from the hydrogenation process are by the very nature of the process in all cases chemically stable to a marked degrees. Stability is related to, but should not be confused with, chemical saturation or carbon to hydrogen ratio. From the engineer's standpoint stability is measured by actual resistance to chemical change in storage and use, which is character of stability meant here.

The third characteristic reaction is that of homogenizing, by which is meant the tendency to produce a mixture of a more homogeneous nature than the raw material by the preferential reformation of the more-complex molecules present. A hydrogenated oil is in general characterized by complete freedom from the extremely complex structures of the asphaltic and resinous or gummy type and relative freedom from the more heavy and complex of the viscous fractions.

These three characteristic effects of hydrogenation treatment, purification, stabilization and homogenization, are highly desirable and their attainment would be in itself of interest to the engineer as offering the promise of a generally higher level of quality for motor fuel and lubricating oil. However, the effects referred to are secondary rather than primary. The most important properties of motor fuels and lubricants are those resulting from the chemical structure of the prevailing type of hydrocarbon present in the mixture. Petroleum products, such as gasoline and lubricating oil, are, of course, essentially hydrocarbons but the range of molecular structures extends from the straight-chain paraffin-type on the one hand to the aromatic type on the other, together with almost infinite possibilities for modifications and combinations of the two types. Each basic type possesses recognized advantages both for fuel and lubricants. In general, the paraffinic types are advantageous for lubricants while the naphthenic types are preferred for gasoline for use in Otto-cycle engines, although in the commercial production of fuels and lubricants difficulties are encountered which enforce compromise. Paraffinic lubricants as commercially produced give greater and more objectionable carbon deposits than do naphthenic lubricants, while naphthenic lubricants usually give higher consumption and have characteristically a much greater change of viscosity with a change of temperature. In producing naphthenic gasolines the result is usually a less pure and less stable product than the paraffinic gasolines but one that is decidedly superior in antiknock tendency. Crudes that yield paraffinic lubricants seldom, if ever, yield antiknock gasoline.

The possibilities that the hydrogenation process offers of reforming the molecular structure of petroleum hydrocarbons along directed lines to obtain products of the so-called paraffinic or naphthenic type have presented an opportunity to avoid these compromises.

The following data present the actual properties and performance characteristics of hydrogenated gasolines and lubricating oils as tested by the fuel and lubrication laboratories of the Standard Oil Development Co.

Hydrogenated Lubricants

Table 1 gives the properties of the hydrogenated and comparative oils used in a series of tests on a White motor truck engine. In this table M and N designate high-grade commercial, paraffin-base, premium-price lubricants, both widely sold and advertised. Oil O is a commercial straight Pennsylvania product, while oils P and Q refer to commercial oils from Gulf Coast napthenic-base stocks, P being widely distributed throughout the country, while Q is distributed mostly along the Atlantic seaboard. Table 2 presents similar data for the oils used in a series of tests on a heavy-duty Mack motor-truck engine. Here oils A, B, C and D are all premium-price products; A being from straight Pennsylvania paraffin-base crude and B and D from mixed paraffin-base stocks. Oil C is a product from mixed base crude but containing more of the naphthenic type of hydrocarbons. Table 3 gives a comparison of hydrogenated oils with lubricants made from the same crudes by the most up-to-date normal refining methods.

A study of Tables 1, 2 and 3 shows that the hydrogenated oils are in general equal or superior, to all others in the relationships that are the usual indications of quality. In general, the gravity of the hydrogenated oils of a given viscosity at 210° F. is high. Their flash and fire points are higher than those of any other oils. Pour test in both hydrogenated oils and natural products depends almost wholly on the nature of the stock and

(Continued on Page 165)

TABLE 1—PROPERTIES OF OILS USED IN WHITE MOTOR-TRUCK ENGINE TESTS

	Hydrolube					
Oil	75	M	N	O	P	Q
Gravity, A.P.I. deg.	26.3	24.8	25.2	27.8	21.3	19.0
Flashpoint, deg. F.	500	440	445	425	445	440
Fire test, deg. F.	585	500	520	480	520	...
Viscosity at 100° F., Saybolt sec.	810	747	741	651	1,400	1,356
Viscosity at 210° F., Saybolt sec.	75.5	74	74	75	80	75
Pour test, deg. F.	10	25	40	30	0	10
Color (Robinson)	9¼	¾	1	2	1½	5
Conradson carbon-residue, per cent	0.161	1.259	0.899	0.964	0.849	0.113
Organic acidity, per cent	Trace	0.1	0.1	...	0.1	0.16
Sulphur, per cent	0.16	0.40	0.40	...	0.34	0.37
Steam emulsion No., sec.	300	360	480	240	1,200+	300
Viscosity index	86	90	90	100+	27	5

TABLE 2—PROPERTIES OF OILS USED IN MACK MOTOR-TRUCK ENGINE TESTS

	Hydro-genated	Hydro-genated				
Oil	M	C	A	B	C	D
Gravity, °A.P.I.	29.5	27 3	28 4	22 9	21 5	24 9
Flash point, °F.	485	460	420	415	415	425
Fire test, °F.	560	540	470	485	475	485
Viscosity at 100° F., Saybolt sec.	478	523	491	575	603	492
Viscosity at 210° F., Saybolt sec.	63	62	66	60	60	61
Pour test, °F.	20	0/No	10	10	0/No	30
Color (Robinson)	19¾	2½	2¾	¾	6½	1¼
Conradson carbon-residue, per cent	0 027	0 065	0 810	0.277	0.276	0 482
Organic acidity, per cent	Trace	Trace	Trace	0 07	0 05	0 06
Sulphur, per cent	0 050	0.118	0 120	0.340	1.448	0.350
Steam emulsion No., sec.	90	540	210	180	120	510
Viscosity index	100	84	108	58	50	87

TABLE 3—COMPARISON OF HYDROGENATED AND NORMAL OILS FROM SAME CRUDES

	Mid-Continent		Colombia	
	Normal	Hydro-genated	Normal	Hydro-genated
Gravity, °A.P.I.	24.9	29 5	22 7	27.3
Flash point, °F.	415	485	410	460
Fire test, °F.	490	560	475	540
Viscosity at 100° F., Saybolt sec.	530	478	510	623
Viscosity at 210° F., Saybolt sec.	62.5	63	55	62
Pour test, °F.	25	20	0/No	0/No
Color(Robinson)	2¾	19¾	3¾	2½
Conradson carbon-residue, per cent	0 482	0.065	0.186	0.065
Organic acidity, per cent	0.064	Trace	Trace	Trace
Sulphur, per cent	0.39	0.05	0.78	0.19
Viscosity index	82	100	35	84

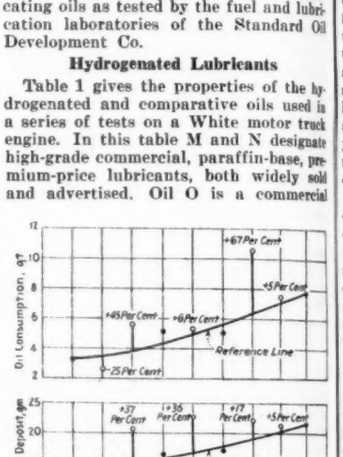


Figure 2—Similar tests on a Mack motor truck engine. The engine in this case had six cylinders and the test conditions were abnormally severe. As in the other series of tests the performance characteristics of the hydrogenated products were superior in all respects to those of the other oils tested.

*Mr. Haslam is vice president and general manager of the Standard Oil Development Co. Mr. Bauer is senior engineer of the fuel and lubrication section. Paper presented at annual meeting, Society of Automotive Engineers.

[1]See Hydrogenation of Organic Substances, by Carleton Ellis, p. 513

Plan Gasoline Lines Along East Coast

Standard of New York to Build Line 100 Miles Long. Believed Forerunner of Similar Development by Other Concerns

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Jan. 26.—The possibility of a network of gasoline pipe lines stretching from strategic points at tidewater to marketing centers in East Coast territory is receiving serious consideration among eastern oil men, following announcement by Standard Oil Co. of New York that it is planning the construction of such a line between Providence, R. I., and Worcester, Mass., with bulk plants to be located at important marketing points along the line.

The official announcement made by Socony this week says: "The Standard Oil Co. of New York has under serious consideration the building of a pipe line for the transportation of petroleum products from tidewater point at Providence to Worcester and Springfield, with possible outlets at two or three smaller bulk stations along the route. This plan is in line with the practice which has been inaugurated during the past two or three years to move these products by pipe line rather than by water, rail or truck where economically sound.

"Pipe lines of this character are already either in operation or under construction on an extensive scale, moving petroleum products from tidewater through Pennsylvania to Ohio and from the producing centers in the Mid-Continent area to the Mississippi River and to the twin cities, St. Paul and Minneapolis, as well as various other lines.

"The tendency to move petroleum products by pipe line rather than by other means of transport where feasible and economical follows the practice inaugurated 50 or more years ago to move crude petroleum to refineries by pipe line as against other means of transport.

"The line as projected by the Standard Oil Co. of New York will be slightly more than 100 miles of 6-inch steel pipe, welded throughout its length and encased in larger diameter steel pipe at highways, streets and railroad crossings and will be buried throughout its length. Due to the rugged nature of the country which this line will traverse, it will be more expensive than lines of similar length built in other parts of the country. It will give the Standard Oil Co. of New York distinct satisfaction to feel that the inauguration of this project will offer employment to local labor in the territory to be served by this line."

Lines in Operation

Sun Oil Co. is already operating a gasoline pipe line from its Philadelphia refinery, the new line running across Pennsylvania into Ohio, and Standard Oil Co. of New Jersey for the past year has been operating Tuscarora Pipe Line as a gasoline carrier from Bayway, N. J., across New Jersey and Pennsylvania. Thus far, the Sun and Tuscarora lines are the only gasoline pipe lines operating in the East Coast territory, but the decision of Standard Oil Co. of New York to construct a similar line in New England is believed to be the forerunner of a number of similar projects.

Gasoline marketing practices in Atlantic Seaboard territory have undergone radical changes during the past two years. Large deliveries of motor fuel have cut substantially into tank car movement, both in deep water and river shipments, and the development of pipe line distribution for gasoline is seen as contributing the final link in the new system of pipe line-barge-truck gasoline distribution that will ultimately largely replace tank car deliveries.

Tidewater Basis

With California, South America and the Gulf Coast shipping considerable quantities of gasoline to Atlantic Coast ports, motor fuel for several years past has been obtainable in the open market at principal East Coast ports at "laid down" prices substantially under prevailing refinery quotations for tank car shipments. This development became of such magnitude and exercised so pronounced an effect upon tank wagon and service station price levels that leading marketers last year revised their system of basing tank wagon and service station prices, substituting for the previously used refinery quotation the market at tidewater as the basis from which wholesale and retail quotations were figured. This change necessitated considerable expansion on the part of marketers in the establishment of bulk marine terminals, and the Atlantic Coast is now dotted with bulk plants of this type.

While Standard Oil Co. of New York is the first of the large integrated companies to announce a gasoline pipe line from a bulk terminal to inland distributing points, it is believed this step is but the forerunner of a similar development on the part of other large units active in the East.

Securing of a right of way for a gasoline pipe line presents more difficulty in the thickly settled territory along the Atlantic Seaboard than in other parts of the country, and construction costs of such lines here will naturally be much greater than elsewhere, but notwithstanding this condition it appears probable competitive conditions will force an extensive pipe line building program, and it is believed the economies which can be effected in distributing costs by the operation of such lines will more than justify the huge expenditures which their construction will necessitate.

While all of the principal companies marketing in the East have bulk terminals in the New York harbor area, it is not likely this section will witness any gasoline pipe line construction, owing to the unusually favorable conditions which exist for the low cost shipping of gasoline and other products via water routes. It is entirely possible, however, one or more pipe lines of this type may be projected to transport gasoline from bulk terminals along the New York State barge

(Continued on Page 166)

Operators Now Working for Embargo

Seek Restriction of Oil Imports to 16,000,000 Bbls. Annually. State Department Sees Difficulties in Plan

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Jan. 26.—The organization of the governors' oil conference has now definitely settled down to a policy to be advocated in Congress. This policy is embodied in a bill introduced in the Senate by Senator Capper of Kansas. It provides for a limited embargo on crude petroleum for three years, during which period the total imports are to be limited to 16,000,000 bbls. annually with an absolute embargo on refined products.

As proposed by the resolution adopted at the oil conference the limitation was to be 20 per cent of the quantity of crude imported from foreign countries in 1928 but it soon appeared that this restriction could involve a great complication in determining the amount each of the oil producing nations would be entitled to export to this country.

The quantity imported to the United States in 1928 was 80,000,000 bbls. of crude and including gasoline the total imports were 98,000,000 bbls.

While the restriction to the importation of 16,000,000 bbls. of crude oil annually represents the legislation now approved by the representatives of the oil conference here it is perfectly well understood that consideration of the legislative program may make necessary some further modification of their demands. However, there is no intention to press for a tariff on oil at this short session of Congress as it is universally agreed that such a policy would be impracticable.

Diplomatic Difficulties

When the debate begins in the Senate on the proposed partial embargo on the importation of crude oil and an absolute embargo on refined products there will be difficulties encountered that are not now receiving attention by the delegates to the oil conference. It will be shown that the State Department has for years been the leader in international conferences in opposing commercial embargos. The diplomacy of this country has strenuously insisted that trade embargos should be absolutely abandoned and that tariffs for protective purposes alone should be resorted to by nations desiring to assist their industries, these tariffs applying to all nations alike. When suggestions have been made favoring a policy of placing embargos on imports by foreign countries the State Department has again and again protested and up to the present time this country has never placed an embargo against any class of imports.

Commercial treaties of the United States with foreign countries and international agreements entered into by this country have stressed our opposition to the embargo in trade.

At this time the United States does not have commercial treaties with Venezuela or Mexico. It has one of the old most-favored nation clause with Colombia and with the Netherlands. It is not improbable that a claim may be made that the most favored nation clause with the Netherlands may apply to the Dutch colonies which might prove embarrassing if Congress should apply the embargo to any products coming to this country from that source. Just what will happen in the way of international protest against an embargo should the United States reverse by action the policy it has so long advocated is not clear at this time because in making its treaties with individual countries the United States has not definitely obligated itself not to impose restrictions on exports and imports. What it has said on that subject has rather been an autonomous expression of its commercial policy. It has been made plain that a policy against such restriction has been followed if not declared in treaties.

Position of United States

However, in 1929 the United States Senate modified the international convention relating to restrictions or prohibitions of an economic character on imports and exports. This related to the Geneva convention's proceeding in 1928 and 1929. In that instance the United States obligated itself internationally not to impose such restrictions. The United States was one of seven countries that made their ratification of this agreement unconditional, the other six being the Netherlands, Denmark, Great Britain, Portugal Japan and Norway. Certain European countries, however, made their ratification contingent upon certain other European countries taking similar action and they are not yet regarded as obligated by that Geneva convention because one important country failed to adhere to it. So it seems there is a loophole for the United States to decline to adhere along with the other six that joined in the ratification but this country having taken a leading role in the convention will at least find itself embarrassed in being the first to violate by actual performance the policy it has so long advocated.

At least until June 30 of this year it is believed the United States could not reasonably become a party to an embargo such as has been suggested as applying to petroleum products.

Netherlands a Factor

While all of the countries that were parties to the Geneva conference are not sources of petroleum the fact that the Netherlands was among them brings in a question of possible discrimination although the colonies of that country were not specifically included in the proceedings. If we should impose an embargo on oil from Venezuela, Mexico and Colombia and did not apply it to the parties to the convention of Geneva the question of discrimination undoubtedly would be raised by those three outstanding oil countries.

Aside from this question of discrimination the imposition of an embargo would constitute a distinct turn-about, it is said, in the policy so long stressed by the State Department. It would be an abandonment of a principle which this country has been earnestly endeavoring to establish in international trade.

The American protests against trade restrictions have assumed concrete form in respect to our trade in automobiles in Europe and export restrictions on rubber, coffee and other materials.

Relies on Tariff

The United States has allowed imports to come to this country unrestricted except for the payment of duties set uniformly for all nations. The German convention was looked upon as resulting in a victory for this principle not quite complete but promising ultimate success for the extension of the principle looking to keeping the markets of the world open to American exporters. Only the lack of one ratification prevented what was hoped to be practically universal ratification. If the principle is now broken down by placing an embargo on the importation of petroleum and its products that action it is believed by many would open the door for European countries to disregard their similar obligations and to denounce their adherence to the international convention, feeling themselves free to impose restrictions on their imports.

Current Oil Well Cementing Practice

Some Fundamentals of Cement and Mid-Continent Methods of Cementing Casing and Making Repairs in Wells

By C. P. Parsons[1] and T. H. Rakestraw[2]*

This paper has been written as a resume of the current use of cement in the drilling and producing of oil wells, especially as these methods apply to the Mid-Continent area. It is hoped that this paper will induce constructive thought for discussion and perhaps add to the knowledge of cementing as a whole.

The earlier wells depended almost exclusively upon "formation shut-offs" to exclude water from productive oil sands. This method was supplemented, in more obstinate cases, by the use of such materials as clay balls, oakum, hemp, old bull rope and the like. Later, the wall packer was introduced and extensively used.

It was not until about 1900 that cementing started to come into use. An unsuccessful attempt was made to shut off bottom water by lowering burlap containers filled with cement, on the sand line. In 1902, F. F. Hill, then field superintendent for the Union Oil Co. in California, decided to try cement to effect a shut-off on a string of casing. By using a special bailer, the bottom of the hole was filled up 50 feet with cement slurry and the casing set down in it. Several cementing jobs were done in this manner in 1903. Later on some jobs the cement was placed through tubing, on the bottom of which was a packer.

The next important contribution to the use of cement was the Perkins and Double method of cementing with two plugs, patented in 1911 and used by the Perkins Oil Well Cementing Co. in the California and Rocky Mountain areas and elsewhere in this country by the Halliburton Oil Well Cementing Co.

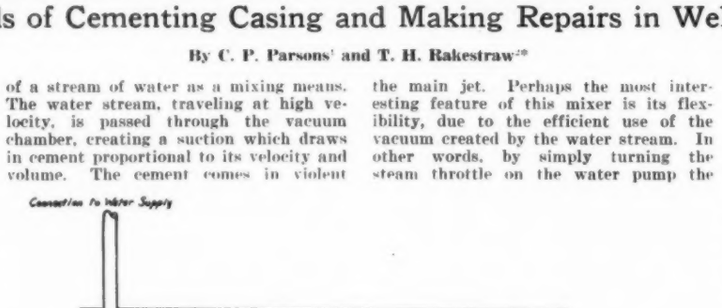
The next important contribution was the introduction of the Halliburton method of using synchronized pumps, a jet-vacuum mixer and a measuring line. The jet-vacuum mixer became the fastest known method of mixing cement and not only revolutionized cement mixing so that very large quantities of cement could be mixed and placed in very deep wells before the cement became set, but simplified the procedure on a rugged, quickly movable basis, available to the remotest wildcat well. The introduction of the Halliburton measuring line offered a very useful and simple means for following the progress of the cement down the hole and stopping it at a desired level.

A combination of the Perkins and Double method and the Halliburton method has become the standard of present day cementing of casing.

This combination has been in use about seven years and while the method of mixing the cement is similar in all cases, the details of placement may vary somewhat on different types of jobs.

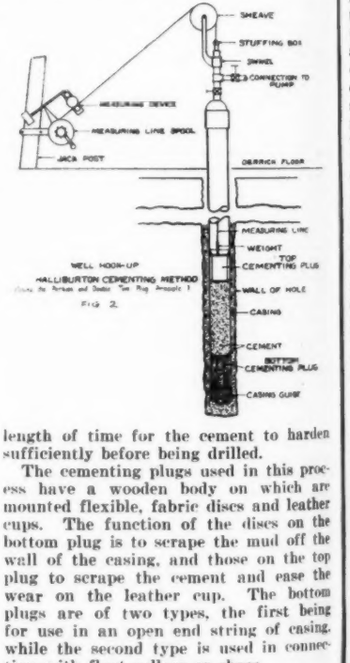
The diagrammatic sketch in Figure 1 is self-explanatory so far as the layout of the surface equipment is concerned. In operation, the water is drawn from the tank by means of the pump provided for that purpose. The dry cement is introduced into the mixer, the resultant slurry passes to the suction box where the cement pump picks it up and pumps it into the hole.

Though the Halliburton method is a group of co-ordinated units, the most important part of the equipment is the mixer, which is of the jet-vacuum type. It consists of a vacuum mixing chamber which draws the dry cement from a large conical hopper immediately above it. The cement comes in violent contact with the water in the mixing chamber, after which it discharges through a pipe into the suction box. The mixer uses the power of a stream of water as a mixing means. The water stream, traveling at high velocity, is passed through the vacuum chamber, creating a suction which draws in cement proportional to its velocity and volume. The cement comes in violent contact with the water stream in the vacuum chamber and is forced into a pipe where the mixing is continued. In addition, the mixer is provided with a by-pass that conducts an auxiliary stream of water into the mixing chamber, providing a means by which the water-cement ratio can be raised above that of the main jet. Perhaps the most interesting feature of this mixer is its flexibility, due to the efficient use of the vacuum created by the water stream. In other words, by simply turning the steam throttle on the water pump the volume of mixed cement delivered by the mixer can be changed without materially affecting the water-cement ratio. This flexibility applies to actual cementing conditions, in as much as it is often necessary to change the rate of delivery of the mixed cement, due to caving in the hole or other causes that might retard the pumping of the cement into the casing.



It may be stated here that provided the mixer is in the hands of competent and careful operators, and the dry cement is free from lumps and fed uniformly as possible into the hopper, and the water supply is uninterrupted, the mixer can maintain a very high speed and control the water-cement ratio well within a desirable range. In some cases, however, there have been occasional irregularities, due to one or more of these reasons, but due to the rapidly growing carefulness that is being exercised by everyone in the drilling of wells these irregularities are becoming very scarce.

In cementing casing by the Halliburton method the Perkins and Double two-plug principle is used as shown in Figure 2. After the bottom plug is placed in the casing, the cement is mixed and pumped into the casing on top of the bottom plug, after which the top plug is placed in the casing. The displacing fluid is then pumped into the casing on top of the top plug, thus forcing both plugs, with the cement in between them, down the casing. The progress of the top plug is followed by means of the measuring line device. The objective of the measuring line operator is to keep the measuring line weight, which is attached to the bottom of the line, in constant contact with the top plug, thus knowing the exact position of the top of the cement at all times. When the plug has reached the point where the desired top of the cement is to be, the pump is stopped, the measuring line withdrawn and the well is allowed to remain shut in the required length of time for the cement to harden sufficiently before being drilled.



The cementing plugs used in this process have a wooden body on which are mounted flexible, fabric discs and leather cups. The function of the discs on the bottom plug is to scrape the mud off the wall of the casing, and those on the top plug to scrape the cement and ease the wear on the leather cup. The bottom plugs are of two types, the first being for use in an open end string of casing, while the second type is used in connection with float collars or shoes.

The Selection and Care of Cement

It is not the purpose of this report to go into lengthy discussion on cements and their physical and chemical properties. A vast amount of research work has been done on the use of cement in concrete, but the fact remains that no one at present can completely explain its behavior under all the different conditions accompanying its use in oil wells. There are certain types of cements in use at present in the oil fields, the characteristics of which will be briefly outlined. There are also certain fundamentals as to the

(Continued on Page 202)

*Presented before the Mid-Continent Section of the A.I.M.&M.E. in Tulsa on January 26, 1931.

[1]Field engineer, Halliburton Oil Well Cementing Co., Duncan, Okla.

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PRODUCER OFFERS SUGGESTIONS FOR OPERATORS IN STRIPPER WELL AREA

By H. G. Ellis
Wiser Oil Co., Bartlesville, Okla.*

For many years we have boasted that the old stripper wells of northeastern Oklahoma, eastern Kansas and many wells of like nature scattered throughout the oil country was "the backbone of the industry." We have watched flush pools develop, have their day and slip back into the class of stripper wells, while the old wells of the Bartlesville sand district maintained a daily regular rate of production. So we regard this production as being so essential that we little dreamed of the possibility of serious difficulty in finding a market for it. The announcement of the withdrawal of the Prairie Oil & Gas Co. as a general purchaser of crude sent the producers whose wells were connected to Prairie lines scurrying to the various other pipe line systems hunting for new connections. The failure to get these connections within a short time caused some wonderment and no little consternation. Soon the fear began to develop that something serious was wrong, and all sorts of answers were heard. Leases in the newer pools from which Prairie disconnected soon found another connection, but northeastern Oklahoma and eastern Kansas found readjustment a slow process.

January 1 there was approximately 31,500 bbls. of distressed oil, or oil without a market outlet. A few of these properties have since been connected to other pipe lines so that at this time the distressed oil amounts to approximately 22,000 bbls. Of this later amount there is estimated to be 6,219 bbls. in northeastern Oklahoma from 1,445 leases, divided as follows:

	Leases	Bbls.
Eastern Osage County	213	1,966
Nowata County	336	1,182
Rogers County	202	1,026
Tulsa County	298	1,114
Washington County	396	931

Negotiations are well under way that should affect a relief for more than 1,500 bbls. from Nowata and Rogers Counties. Likewise, it is expected that relief for a major portion of Tulsa County's distressed oil will be effected soon. A considerable portion of the problem, however, is yet to be solved.

The method by which these wells may be saved is a problem. One thing, however, is quite apparent. The producers must help lighten the load of the transporters—the pipe lines. It is uneconomic and unreasonable to require so many tank connections for so small amount of oil. Unitization of these properties would appear the first step toward an economic solution, and a solution that is not economic is false and will not long endure. A number of these properties can be grouped and the oil pumped into a fewer batteries of tanks. There, too, needs to be a reasonable revision in the size of tanks used. We have gone to the extreme in cutting down the size of our tanks. Small tanks save evaporation

(Continued on Page 191)

*Presented before the Engineers' Club of Bartlesville, Okla.

High Cost of Keeping Oil in Storage

With All Fear of an Early Exhaustion of Crude Gone From Their Minds Oil Companies Seek to Free Themselves

By James McIntyre

While men outside the oil business are glibly talking of opening up this and that field and storing the surplus production it might be well to call attention to the fact that most oil companies have adopted a policy directly opposed to storing oil. Executives of the largest companies can see no reason for "saving oil for the lean years to come," because they can't see any sign of the lean years. There is so much oil that they are planning to keep all of it stored in the ground, excepting that quantity which is currently needed to fill the public demands for oil products.

Maybe because eminent geologists in the first decade of the oil industry predicted that when the oil fields of the State of Pennsylvania were exhausted there would be no more crude petroleum produced, the industry thought it well to store up a supply of crude for the lean years and it began doing so and by 1870 it had accumulated 340,000 bbls. of oil. In that year pipe line runs of crude oil were 5,360,560 bbls., or an average of 14,412 bbls. per day. The deliveries to refiners during that year were 5,225,633 bbls., or an average of 14,317 bbls. per day, and at the close of that year stocks had increased to 544,626 bbls., or about 38 days' supply based on the average demand.

Pessimistic geologists continued to predict that our oil would be exhausted in a few years and the frightened oil industry continued to build tanks to store overproduction. By 1880, 17,145,104 bbls. had been put away on tank farms which was equal to 394 days' consumption based on the 1880 rate of crude oil demand.

The Bradford Field was responsible for much of the stored oil of 1880 and for the crude oil stocks that kept piling up until they had reached 36,872,892 bbls. at the close of 1884, or equal to the crude oil demand of about 570 days, based on current deliveries to refiners. Thereafter stocks of Pennsylvania Grade oil declined rapidly, notwithstanding the field in which it was produced was extended into West Virginia, New York and Ohio, but the prophecies of the geologists who said that the exhaustion of Pennsylvania oil meant the end of the oil industry were knocked into a cocked hat by the discoveries in the Trenton Rock fields of Ohio and Indiana, followed by discoveries in Illinois and Kentucky; and in Kansas, Oklahoma, Texas, Arkansas, Louisiana, Montana, Wyoming, Colorado, New Mexico, Michigan and California, and the crude stocks continued to increase with the discovery of new fields.

Increase Continued

This piling up of crude oil continued with few downward trends until America's entrance into the European war, when it was reduced very materially much to the relief of the companies that owned the oil which had piled up to a total of 146,041,000 bbls. in pipe line and tank farm stocks alone at the close of 1917. In the following year 24,314,000 bbls. was withdrawn from storage and in 1919 a further draft of 2,646,000 bbls. was made, but in 1920 it began piling up again, and to such an alarming degree that the leaders of the industry, with a few exceptions began to view crude oil stocks as a burden and the effort was made by some of the companies to reduce them. It was feared that the accumulation of hundreds of millions of barrels of oil in steel and concrete storage would never find a market that would return to the owners of the oil the price they had paid for it and the annual upkeep of the product.

Cost of Storing Oil

The cost of storing oil, according to the figures of some of the largest owners of oil stocks, ranges from 18 cents up to 25 cents per barrel per year. Mid-Continent crude oil that cost $1 per barrel in 1920 and is still in storage would have to bring at least $2.80 per barrel at this time to break even, and the market for 36 gravity oil in the Oklahom and Kansas area is only 95 cents per barrel. Thirty-six gravity oil bought in 1926 at the market price of $2.30 and still in storage has piled up costs of say 63 cents per barrel for maintaining it and is worth on its owner's books $2.93 per barrel, but to a prospective buyer only 98 cents per barrel. The average price of crude oil in the United States covering the past 70 years has been around $1.33 per barrel. At that rate the 373,965,000 bbls. of crude oil now in storage on tank farms and at refineries, etc., may be said to have cost $486,000,000 plus 18 cents per barrel per year for maintaining it in tanks, and at the present prices for crude oil it is doubtful if the market value of the crude oil now in storage would be more than $300,000,000 if it were possible to find buyers for it.

The cost of storing oil is divided into a number of major items including the cost of tank farms, purchased or rented, the original cost of the storage tanks, depreciation of the tanks, insurance on oil and tanks, loss in gravity and volume of the oil, cost of filling and emptying the tanks, which includes the cost of the pipe lines to the tanks and the loss of interest on the money invested without any return. Companies with large storage maintain a tankage department, with a superintendent and his office force and a field force, for these big steel containers require constant attention even after they are filled and the tank farm appears to the casual observer to be inactive.

In the old days of the wooden top tank (and they were quite common even as late as 10 years ago) the evaporation loss was considerable, and the deterioration of the oil was an important and expensive factor. Modern steel roofs, equipped, and the free use of paint have reduced evaporation losses, even though they have been expensive investments.

Cost of Tankage

The modern 80,000-bbl. tanks in use today cost on an average about $25,000 each and the 55,000-bbl. tanks cost on an average $15,000 each. It would take four thousand six hundred seventy-five 80,000-bbl. tanks to hold all the crude oil in storage in the United States, and at an average of $25,000 each these would have cost $116,875,000, and they can be used for nothing else and when they are emptied they are a dead loss in that condition. The same might be said of wooden tanks or concrete tanks. They are good for but one thing and aside from that use they might as well be charged off.

Oil companies with 70 years of experience in the storing of oil against the day when there would be no oil have made a direct about face. The policy now is to get rid of the incubus of crude stocks. With fields of unprecendented actual potentiality in California, New Mexico, West Texas, East Texas and Oklahoma, there is no longer a fear that the United States will run short of crude petroleum, for many years and the object of storing oil has disappeared. Nothing would induce most oil companies to add to their stocks save a very low price for the oil, and such a price would be absolutely ruinous to all but a handful of oil companies and individuals lucky enough to be owners of leases in a few flush fields.

Concrete Storage Must Be Impervious

Lasting Quality of This Form of Oil Reservoir Depends Largely Upon Inability of Deleterious Substances to Penetrate It

By John F. Hough

Assistant Manager, Structural and Technical Bureau, Portland Cement Association

The rapid and universal realization of the basic principles that control the making of concrete has eliminated many of the erroneous ideas regarding the durability of the material in constant contact with crude oil. The understanding of the importance of the water-cement ratio as the basis for designing and controlling concrete mixtures has paved the way for a more intelligent use of the material "concrete." Strength, as gauged by the compression in pounds per square inch necessary to fracture a specimen of standard dimensions, has long been used as a measure of the quality of concrete.

Comprehensive strength and the water-cement ratio have a very definite and precise relation. As a measure of quality actually attained, comprehensive strength is an excellent guide. Structural strength is the first consideration in design, and it cannot be relegated to a position of minor importance. There is, however, another equally important factor that should be considered, that is, the degree of durability that will be required of the concrete, under the conditions of exposure and service peculiar to the structure being designed.

Durability in concrete, including its structural strength, is the ability of the material in service to resist the physical as well as the deleterious action of destructive agents which tend to destroy its usefulness. Physical forces may be divided into two classes: Dead or live weight including impact, and, processes similar to frost action, or the action of dehydrating salts. Dead load or applied forces must be resisted by structural design. Deleterious or destructive agents call for other considerations. When these latter influences are designed for adequately, the probability is that the strength requirements will be met amply. Thus in concrete structures for the storage of crude petroleum, a consideration of the requirements for durability is often more important than the design for strength.

Destructive Agents

The destructive agents in crude oil which tend to destroy the usefulness of any structural material, may be both chemical and physical. In regard to concrete, the action in either case is similar or related. If the agent is chemical, the action obviously proceeds by the dissolving out of essential ingredients of the hardened cement paste that binds the sand and stone of concrete together.

The greatest deterioration is bound to occur from penetration, which progressively increases the area of attack. If the agent is physical, as in the case of frost action on the entrained water, or through the deposition near the surface of dissolved salts as the liquid is evaporated, the action is again caused by penetration. From these facts it can be understood readily that in the majority of cases the greatest deterioration in exposed concrete comes from the penetration of moisture to the interior of the mass. The problem then revolves itself into controlling the factors affecting liquid tightness of the cement paste through which deleterious substances must find their way. Thus it may be stated that liquid tightness in a large degree determines durability.

No mention will be made here of the structural design of tanks or reservoirs. Previous articles[1] in The Oil and Gas Journal have treated these subjects. It is assumed that sound engineering designs are provided. Regardless of the adequacy of the structural design, failure to observe the fundamental principles of concrete making may defeat the best practice in other respects. On the other hand, the proper design and control of the concrete mixtures, and the correct placing and curing, when combined with sound engineering design, will result in a tank or reservoir that will endure indefinitely with negligible maintenance.

Conception Reversed

In the past it has been customary to conceive of concrete as something produced by taking a mass of aggregate and filling its interstices with a mortar, which in turn was produced by taking a mass of sand and filling it with cement. The modern principle is the reverse of this; a batch of paste of fixed water ratio is prepared, and the aggregates are then combined with the paste. This conception is as significant in its practical application as it is logical in its relation to the chemical and mechanical factors involved.

The factors involved in the correct understanding of concrete, particularly with reference to liquid tightness, can be clarified greatly by a conception of concrete as an aggregate mass held together by a hardened paste of portland cement and water. If strong concrete is derived, the paste must develop the required strength when hardened. If liquid tight concrete is required, the hardened paste must be liquid tight.

When portland cement is mixed with enough water to form a paste the compounds of the cement react with the water to form new compounds which adhere to each other and to the aggregates to form the binding medium which gives concrete its useful properties. These chemical reactions require (1) time, (2) favorable temperature and (3) the continued presence of water. If any one or more of these requirements are not met, the cement paste cannot have the strength or liquid tightness of a paste in which the requirements have been more completely met.

The relative proportions of cement and water also affects the quality of the hardened paste. Complete hydration of an amount of cement can be accomplished by an amount of water that is insuf-

(Continued on Page 195)

[1] Concrete Tanks for Storage of Oil, Feb. 7, 1929. Concrete Lined Storage Reservoirs, June 21, 1928.

Several Refineries in Oklahoma City

Seven Plants With Capacity in Excess of 16,000 Bbls. Daily Ready to Operate If Crude Becomes Available

By Robert C. Conine

Of the seven refinery plants built in the Oklahoma City Field, three are shut down, three have operated with numerous shut downs and one has functioned continuously. With possibly two exceptions the refiners look to the lifting of proration, or at least to a modification of the present proration order to allow a flow of 10 per cent of potential, for the solution of their operating problem.

The total maximum daily capacity of the seven plants is 16,200 bbls., and although the aggregate for those now in operation is 10,500 bbls. daily, operations are being conducted at these plants at considerably below the plant capacity figures. One of the plants has run only 3,000 bbls. of crude in the past two weeks; another resumed operations last week at below half of the maximum capacity; still another, the largest, is running only 700 bbls. daily. The fourth is taking about 900 bbls. daily.

One of the refineries, completed September 1, 1930, has a daily capacity of 2,000 bbls., but has run only 9,600 bbls. of crude oil since it started. This plant has been shut down about two months and there is no indication that it will be reopened soon.

All of the production of these refineries is shipped in tank cars. In two cases loading racks are immediately accessible on the railroad tracks, and for the other refiners short pipe line systems extend from half a mile to 3 miles to the loading racks.

Status of Plants

All of the plants now in operation are supplied by pipe line. The Black Gold Refining Co., built by its president, Dan A. Corcoran, has operated without interruption taking an average of 900 bbls. of crude oil daily. This is a 1,500-bbl. capacity topping plant and ample storage for the plant's production is provided. Charles W. Scott is vice president and sales manager, and W. E. Netherlin is superintendent of the refinery.

The largest plant, that of the Capital Producing & Refining Co., which has a daily capacity of 3,500 bbls. is supplied by a 6-inch line from two producers, one an 85,000-bbl. well and the other a 12,000-bbl. well, from which it is taking on an average of 700 bbls. daily. This is a skimming plant. J. R. Travis, of Duncan, Okla., is president and general manager; I. M. Roddie, Oklahoma City, is vice president; Ed C. Tippett, Blackwell, Okla., is secretary and treasurer; A. R. Stribling is superintendent of the refinery and purchasing agent; N. R. Wage is chief engineer; O. L. Woodrum is chief chemist, and E. C. Check is sales manager.

The Peveto & Peacock Refining Co., which is to be known soon as the Peacock Refining Co., is owned by John H. Peacock, president, the only officer listed. This is a skimming and topping plant with a daily capacity of 2,500 bbls., and has just recently resumed operations. It is supplied through a 5⅜-inch line from four wells on the C. C. Julian properties, and its loading rack is located less than 100 feet from the plant on the Frisco Railroad line. Lad Shoemaker is superintendent of the plant.

The White Oak Corp. plant has a daily capacity of 3,000 bbls. Officers of the corporation are: Victor H. Smith, president and treasurer; Luis W. Pratt, vice president; W. G. Johnson, vice president; Fred Norton, assistant to the president; B. F. Green, secretary; A. H. Mayo, superintendent of the Oklahoma City refinery and chief engineer.

The Electrol Refining Co. plant, of which Judge W. N. Stokes of the Slick estate interests is president, and E. W. Whitney vice president and treasurer, is the oldest of the seven. It was built more than eight years ago to refine crude oil from the Burkburnett (Texas) Field. This is a skimming plant with a daily capacity of 1,200 bbls. At the time of its shutdown more than two months ago the plant was taking only 800 bbls. daily from tank cars. C. C. Calvert is sales manager of the refinery.

The Crump Refining Co. plant, which has a daily capacity of 2,000 bbls., was completed September 1, 1930, to run crude down to cylinder stock. This plant has operated only three weeks of this time refining six shipments of 1,600 bbls. each obtained from the Peveto & Peacock company. The refinery was shut down two months ago when the supply of crude oil was cut off, and no new sup-

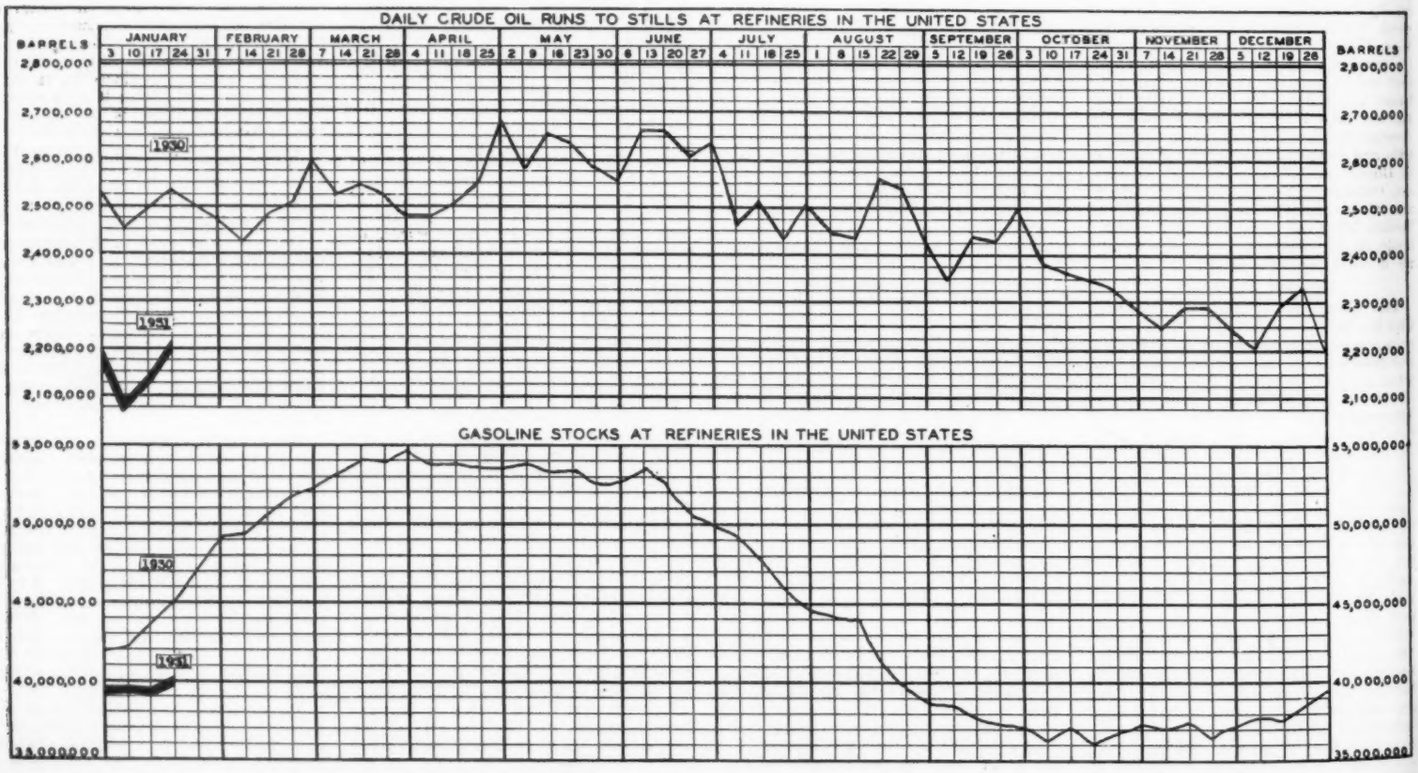
(Continued on Page 168)

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending January 24.

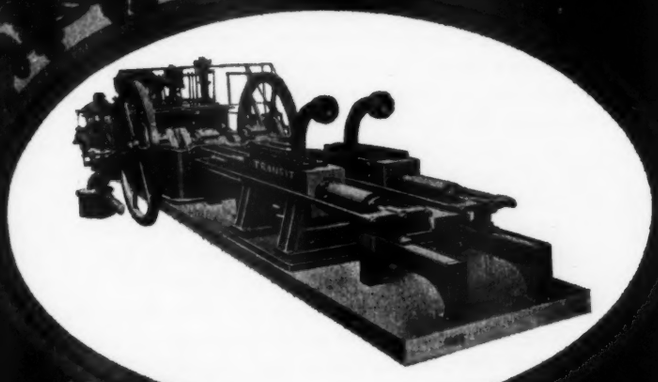
	Week ending January 24, 1931				Week ending January 17, 1931				Week ending January 25, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	438,700	6,476,000	8,400,000	100.0	466,100	6,177,000	8,552,000	100.0	3,362,900	7,043,000	7,477,000
Appalachian	93.8	83,700	1,157,000	1,046,000	93.8	85,100	1,131,000	1,053,000	91.0	512,800	1,472,000	738,000
Indiana, Illinois, Kentucky	97.5	248,200	4,669,000	3,003,000	97.5	249,100	4,545,000	3,215,000	98.6	1,976,700	6,446,000	3,328,000
Oklahoma, Kansas, Missouri	89.4	247,700	2,800,000	3,826,000	89.5	223,300	2,704,000	3,856,000	89.1	1,935,900	4,211,000	3,136,000
Texas	91.9	560,300	7,582,000	10,070,000	91.9	542,200	7,152,000	10,518,000	90.7	3,881,100	7,739,000	13,062,000
Louisiana and Arkansas	98.3	134,100	1,596,000	2,290,000	98.3	136,600	1,603,000	2,334,000	96.8	1,299,700	2,553,000	4,291,000
Rocky Mountain	93.1	40,400	1,700,000	854,000	93.1	40,600	1,652,000	978,000	93.0	400,600	2,463,000	1,008,000
California	98.8	478,600	15,515,000	102,463,000	98.8	475,300	15,420,000	103,221,000	99.3	4,209,100	15,168,000	109,875,000
Total United States	95.7	2,231,700	41,495,000	132,052,000	95.7	2,218,300	40,384,000	133,728,000	95.5	17,578,800	47,095,000	142,915,000
Texas Gulf Coast	100.0	436,900	6,165,000	7,626,000	100.0	418,700	5,819,000	8,024,000	100.0	3,001,100	6,639,000	10,234,000
Louisiana Gulf Coast	100.0	88,300	1,355,000	1,308,000	100.0	95,100	1,353,000	1,369,000	100.0	869,100	2,215,000	3,481,000

(1) Per cent of refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1930 based on weekly reports of the American Petroleum Institute. Data for 1929 derived from monthly reports of the Bureau of Mines, Department of Commerce. Figures for last week not shown in graph but are included in above tables.

STRONG *and* STURDY



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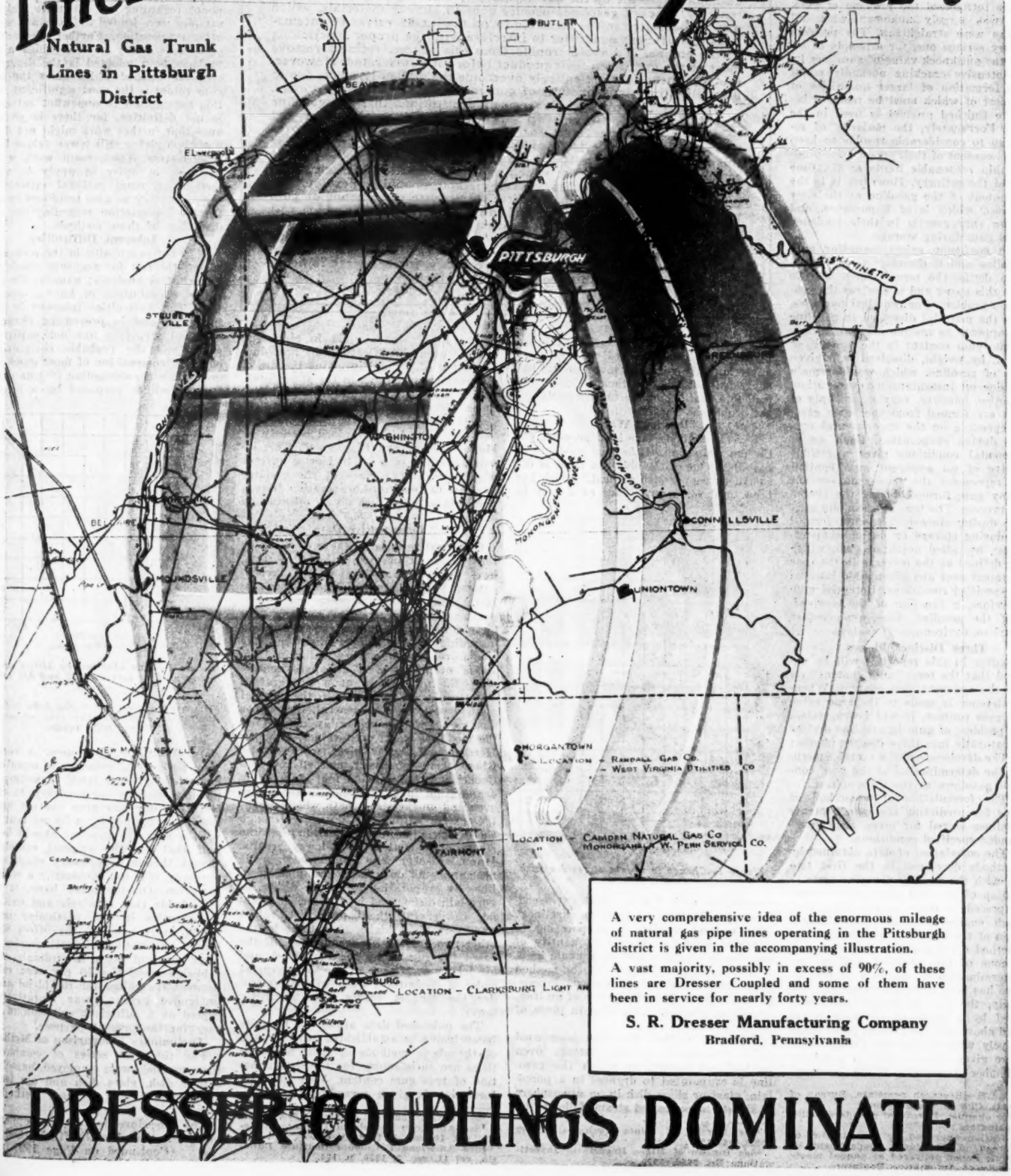

A very comprehensive idea of the enormous mileage of natural gas pipe lines operating in the Pittsburgh district is given in the accompanying illustration.

A vast majority, possibly in excess of 90%, of these lines are Dresser Coupled and some of them have been in service for nearly forty years.

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DRESSER COUPLINGS DOMINATE

Determining Gum Contents of Gasolines

Comparison of Methods to Be Employed. One Test to Measure Gum Present and Another to Measure Gum Formed in Storage

By Oscar C. Bridgeman[1] and Elizabeth W. Aldrich[2,3]

It frequently happens that the solution of one problem is accompanied by the introduction of another equally difficult problem. Thus the widespread adoption of cracking processes to furnish an adequate supply of high antiknock value gasoline has introduced the problem of gum, which was largely unknown when all gasolines were straightrun. The problem is a very serious one, for attempts to increase the antiknock value of gasolines by more intensive cracking normally result in the formation of larger quantities of gum, most of which must be removed before the finished product is used in the engine. Fortunately, the majority of refiners go to considerable trouble to keep the gum content of their commercial product within reasonable limits at the time it leaves the refinery. However, it is the gum content of the gasoline at the time it is used which is of importance, and gasolines vary greatly in their tendency to form gum during storage.

Much confusion exists regarding gum in gasoline and it therefore seems advisable to define the terms which will be used in this paper and to analyze the general gum problem. For practical purposes, gum is the material dissolved in gasoline which appears as residue on evaporation. The true gum content is the amount of material, by weight, dissolved in a given volume of gasoline, which would remain as residue on instantaneous evaporation. In practice, however, varying amounts of residue are formed from the same gasoline, depending on the experimental conditions during evaporation. Each set of experimental conditions gives a residue indicative of an apparent gum content which represents the true gum content plus any gum formed during the evaporation process. The true gum content may change during storage. The gum formed either during storage or during evaporation may be called potential gum, which can be defined as the increase in the true gum content over any given time interval under specified conditions. Potential gum is, therefore, a function of the composition of the gasoline, time, temperature and various environmental factors.

Three Distinct Phases

Hereafter in this report it will be understood that the term "gum content" refers to the apparent gum content. Whenever reference is made to the true value of the gum content, it will be so stated.

The problem of gum in gasoline divides itself naturally into three distinct phases:

1. The development of a suitable method for the determination of the gum contents of gasolines at the time of test.
2. The formulation of a method or methods for predicting the gum contents of gasolines stored for given time intervals under specified conditions.
3. The correlation of data obtained by the methods developed in the first two phases with the results of engine tests.

Solution of the first phase must necessarily precede a study of the other two, although engine tests are the ultimate criterion of the satisfactory nature of the test method developed. Up to the present time, none of the proposed methods for the determination of the gum content of gasoline has been proved satisfactory. Accordingly, the present investigation was initiated by a study of the first phase outlined above and the present paper deals exclusively with this phase. Comparative data are given on a variety of gasolines by a number of methods. While this work has not been completed, sufficient information has been obtained to permit an analysis of the variables involved and has suggested methods of attack which should lead to a more complete understanding of the problem.

TEST METHODS TO BE DEVELOPED

The oil refiner has met the demand for a large supply of high-antiknock gasoline by the development of cracking processes. Unfortunately, cracked gasolines usually contain gummy materials, which may be deposited in the manifold or on the intake valves of automobiles in sufficient quantities to interfere with the proper functioning of the engine. To avoid trouble from this source, refiners remove most of the gum from their product before it is marketed. However, this treatment does not entirely overcome the difficulty, since, due to instability, injurious amounts of gum may be formed during storage.

In order to ensure to Government institutions that the gasoline that they obtain for use in airplanes will not give trouble from gum deposition, a limit was set for the permissible amount of gum as measured by a test devised for this purpose. It has been shown that this method measures not only the gum in the gasoline at the time of test but also some of gum which may be formed on storage. It is now generally believed that two test methods should be developed to take the place of this one, the first to measure the amount of gum present in the gasoline, the second to measure the amount which will be formed on storage. At the request of the Army Air Corps, the Bureau of Standards has made a study of a number of the methods which have been proposed for the first purpose. Since none of those studied appears to be completely satisfactory, further work is being done in order to obtain a more suitable method.

Previous Work

Several methods have been proposed for the determination of the gum contents of gasolines. One of the oldest of these is the so-called "copper dish method," which has been used for many years as a test in connection with United States Government specifications for aviation gasolines[4]. This method consists in evaporating to constant weight a measured quantity of gasoline in a copper dish on a steam bath. A number of modifications of the method have been introduced by various investigators, such as the substitution of an iron, porcelain, glass or silica dish in place of the copper dish.

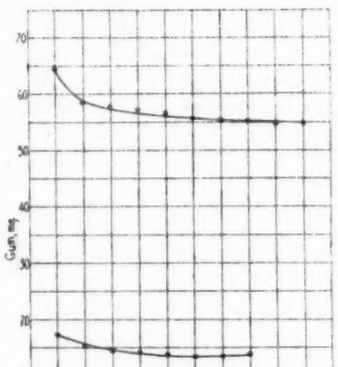

Figure 1—Change in weight of residue with time of heating.

A second method that has been used quite extensively is the "steam oven method" of Cooke[5], in which the gasoline is evaporated to dryness in a porcelain, glass or silica dish in an atmosphere of slightly superheated steam, followed by drying to constant weight in air in an electric oven. Modifications in procedure have been introduced involving the use of different temperatures in the steam oven, and in some cases the subsequent drying in an air oven has been omitted.

A third method, designated by the term "air jet," has been proposed recently by Hunn, Fischer and Blackwood[6]. This involves the use of a jet to blow a current of air over the surface of the gasoline in order to accelerate evaporation from a porcelain or glass dish on an open steam bath.

Comparative Data

Comparative data on the same fuels by these methods, or modifications of them, have been obtained by several investigators. Vorhees and Eisinger[7], and also Herthel and Apgar[8], recently made comparisons between the gum contents of a large number of samples by evaporation according to the copper dish and the steam oven methods. They maintained the steam oven, however, at approximately 335° F. rather than at a temperature slightly above 212° F. as in the original method of Cooke. In general, the copper dish values were considerably higher than the modified steam oven values, although Herthel and Apgar give two examples where there is a very marked reversal. Cooke[5] reported data on four samples by evaporation in glass dishes in the steam oven and on the steam bath which roughly agreed with one another, although there was a definite indication that the steam oven method gave lower results. Hunn, Fischer and Blackwood[6] made measurements on a large group of gasolines by evaporation in copper dishes, in porcelain dishes and by the air jet method. In general, the copper dish values were very much higher than those by the other two methods. In about one-half the cases the results by the glass dish and air jet methods were of the same general order of magnitude, while in the remainder the air jet values were distinctly lower.

The published data appear to be quite inconclusive in establishing whether any of the above methods or their modifications are satisfactory for the determination of true gum content. Very little information is given regarding the reproducibility of the methods, although there seems to be a rather widespread feeling that variations in duplicate determinations by the copper dish method are liable to be large, whereas the variations are considered to be much smaller by the other methods. There is also considerable doubt regarding the extent to which the samples were heated to "constant weight" after evaporation. Further, the criterion of a satisfactory method which appears to have been adopted is the assumption that the method which gives the lowest gum values is the most significant. While this assumption is somewhat rational, it is not definitive, for there is no assurance that further work might not develop a method giving still lower values for the gum content. The present work was undertaken in order to apply to various methods a more rational criterion for their accuracy as gum tests and to amass further information regarding the reproducibility of these methods.

Inherent Difficulties

It is not practicable in the present case to use the test for accuracy employed in quantitative analysis; namely, the preparation of solutions of known concentration. The difficulties inherent in isolating gums and in preventing changes in chemical structure are not easily overcome, and the probable complexity of chemical composition of most gums would necessitate the extraction of gum samples from gasolines prepared by a large variety of cracking processes. A corollary from the general principle of quantitative analysis suggested itself, however, as a possible criterion for accuracy, to the effect that, for any gum content method, the value obtained for a 50 per cent blend with a gum-free gasoline should be one-half that for the original sample. Although this is a necessary condition for accuracy, it is not necessarily a sufficient condition. On the other hand, it seems improbable that catalysis and oxidation, if operative in the particular method, would exert one-half the effect on the blends as on the original samples in a large group of cases. Accordingly, the establishment of the 50 per cent relation between the values for the blend and the unblended gasoline was tentatively accepted as a sufficient criterion of accuracy for the present purpose.

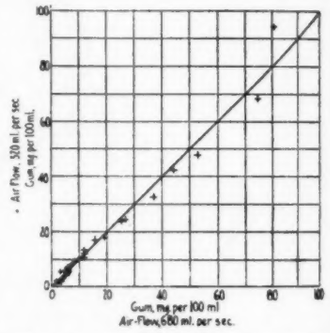

Figure 2—Gum obtained by air-jet method, using air-flow rates of 320 and 680 ml. per second.

The good agreement of the data indicates negligible effect of the rate of air-flow over this range.

Preliminary Comparison of Methods

For the first series of comparisons, three methods were employed, namely, the copper dish, glass dish and air jet. Detailed descriptions of these methods follow.

The procedure used in the copper dish method is that described in Method 530.1

(Continued on Page 199)

[1] S.M.S.A.E.—Research associate, Bureau of Standards, City of Washington.

[2] Junior chemist, Bureau of Standards, City of Washington.

[3] Publication approved by the director of the Bureau of Standards, Department of Commerce. Paper delivered at annual meeting, Society of Automotive Engineers.

[4] See Bureau of Mines Technical Paper 322B, 96, 1927.

[5] See Bureau of Mines Reports of Investigations No. 2686, 1925.

[6] See S.A.E. Journal, January, 1930, p. 31.

[7] See American Petroleum Institute Bulletin, vol. 10, sec. 2, 1929, p. 169.

[8] See American Petroleum Institute Bulletin, vol 11, sec. 3, 1930, p. 124.

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SENATOR NYE OFFERS RESOLUTION TO INVESTIGATE THE OIL INDUSTRY

WASHINGTON, D. C., Jan. 26.—To ascertain whether prices of crude oil and gasoline are being affected by price agreement or practices in violation of the anti-trust laws Senator Nye, of North Dakota, has proposed an investigation of the oil industry. The senator asked to be excused from serving on the special committee of five senators to make this investigation because of other duties.

The special committee would be instructed to inquire into the causes of the low price of crude, and margins between the price of the crude and the selling price of by-products; whether these conditions have resulted from any "conspiracy in restraint of trade," and whether the prices have been controlled by any corporation, joint stock company or corporate combination.

Alleged discriminations, boycotts and blacklists against particular fields also would be investigated, as well as profits of companies refining and marketing petroleum in this country for 1929 and 1930.

This action was taken while Senator Nye was speaking on his proposed bill to put teeth in the law creating the Federal Trade Commission to protect independent oil operators and merchants from monopolies. The senator's bill would give the Federal Trade Commission judicial powers to enforce its findings. He declared that "small business is being crushed by the juggernaut of big business and monopolies. Community life," he said, "is being destroyed by chain stores, chain banks and monopolies."

Mid-Continent crude, he said, was $2.04 a barrel in 1926 and $1.29 in 1929 while in 52 cities the price of gasoline increased from 18.09 to 18.29 cents a gallon.

The Nye resolution has been referred to the Senate committee on audit to report on the expenditure necessary in making the investigation. It is not certain how soon this committee will report or what report will be made. Opposition to the passage of the resolution calling for expenditure of money is expected.

Representative Garber of Oklahoma has introduced a duplicate of the Capper bill to prohibit the importation of crude petroleum during the next three years and providing that such apportionment shall be apportioned among the countries from which crude was imported in 1928. The provision for apportionment has been abandoned by the leaders of the oil men. The bill provides for absolute prohibition of refined products.

High Spots in Field News

KANSAS

Ritz Pool has 3,000-bbl. well.

SOUTHWEST TEXAS

Big gas well in Zapata Pool.

ROCKY MOUNTAIN AREA

Hobbs Pool extended mile eastward.

GULF COAST

Possible new field in Calcasieu Parish.

WEST TEXAS

Big Lake's largest well increasing output.

OKLAHOMA

Extension of West Chandler Pool, Lincoln County, half mile south, by 1,800-bbl. well.

NORTH TEXAS AND PANHANDLE

Good well in Worley-Reynolds Pool. Sullivan area, Gray County, has a second best well.

NORTH LOUISIANA-ARKANSAS

Wildcat failures in Zwolle district. Two gassers in Mississippi may be markers in Jackson Pool.

CALIFORNIA

Completion on North Dome of Kettleman Hills 2,000 bbls. instead of expected 10,000-bbl. producer.

EAST CENTRAL TEXAS

Well in Gregg County flows 320 bbls. in first hour, opening first oil pool in county, and third Woodbine sand pool in East Central Texas.

ATLANTIC BUYS ANOTHER GULF COAST PIPE LINE

HOUSTON, Tex., Jan. 27.—Sale by the Gulf Coast Pipe Line Co. of its pipe line system out of the Refugio Field, its storage facilities and deep-water terminal on Harbor Island, near Port Aransas, to the Atlantic Pipe Line Co. was reported in Houston today. The deal involved a consideration of around $2,000,000.

The Gulf Coast Pipe Line Co. has been owned by the Moody-Seagraves-Morgan interests of San Antonio. The system includes two parallel lines, one 6 and 4-inch and the other 10 and 8-inch, extending from Refugio to the Harbor Island terminal, a distance of 38 miles. In addition are two modern pumping stations, one at the Refugio Field tank farm and the other midway between Refugio and Port Aransas.

This system has a capacity of better than 50,000 bbls. daily. It is one of two which serve the Refugio Field, the other being operated by the Humble Pipe Line Co. and extending to Humble Oil & Refining Co.'s refinery at Ingleside. All the lines are comparatively new as Refugio did not come to the front as an oil producer until late in 1929 and early in 1930. The deal does not involve any of the production holdings of the Moody-Seagraves-Morgan interests.

This is the second pipe line system purchased by the Atlantic Pipe Line Co. on the Gulf Coast this year. Early in January the company bought the holdings of the Liberty Pipe Line Co. at Barbers Hill, including a 6-inch line from that field to loading facilities at Cedar Bayou, a distance of 8 miles. The latter transaction also included the Texas City refinery of the Terminal Oil & Refining Co., which was associated with the Liberty Pipe Line Co., both companies being owned by Mills Bennett interests.

OIL MAN'S CALENDAR

JANUARY

29-30—Grand Forks, N. Dak., North Dakota division, Northwest Petroleum Association, Dacotah Hotel.

FEBRUARY

3-4—Des Moines, Iowa, tenth annual convention, Iowa Petroleum Association, Fort Des Moines Hotel.

16-21 — San Francisco, Calif., National Western Metal Congress and Exposition.

24-26—Columbus, Ohio, Ohio Petroleum Marketers Association, Neil House.

MARCH

11-13—Detroit, Mich., Michigan Oil Men's Association, Statler Hotel.

16-22—Los Angeles, Calif., second annual Exposition, Oil Equipment and Engineering Exposition.

19-20-21—San Antonio, Tex., American Association of Petroleum Geologists, Gunter Hotel.

30-3—Indianapolis, Ind, eighty-first meeting, American Chemical Society.

APRIL

13-18—Philadelphia, Pa., eighth annual convention and exposition, American Oil Burner Association, Ben Franklin Hotel.

MAY

4-9—Charlotte, N. C., Good Roads Convention.

Memphis, Tenn., Natural Gas Department, A.G.A.

13-14—A.P.I. Division of Marketing, Mayo Hotel, Tulsa.

JUNE

3-4—A.P.I. Division of Production, Baker Hotel, Dallas, Tex.

HEARING ON TARIFF SET FOR FEBRUARY 6

WASHINGTON, D. C., Jan. 26.—The House Ways and Means Committee will open hearings on legislation for the protection of the domestic oil industry, February 6.

Representative Garber, Republican, Oklahoma, said Monday Chairman Hawley had fixed this date for hearings. Garber said the committee was going ahead without waiting for the report on the tariff commission's investigation.

MARKETERS ELECT DIRECTORS

Seven new directors were appointed by the Oklahoma Petroleum Marketers Association during a meeting in Oklahoma City, January 23 and 24. A meeting of all directors will be held in Tulsa February 6 to elect officers for the coming year and to choose a city in which the next annual meeting will be held. The new directors include A. J. Haney, of the Haney Oil Co., Shawnee; O. L. Cordell, of the Cordell Oil Co., Tulsa; N. G. Eitelman, Barnsdall Oil Co., Tulsa; J. G. Davis, Continental Oil Co., Ponca City; O. L. Self, Empire Oil & Refining Co., Tulsa; Harry A. Trower, Phillips Petroleum Co., Bartlesville; and M. R. Meyers, of the Wirt Franklin Petroleum Co., Ardmore.

Directors held over for the next year were Clark W. Trammell, of the Trammell Oil Co., president of the association, Chickasha; C. F. Sloane, Sloane Oil Co., Oklahoma City; J. R. Travis, Altus Oil Co., Altus; and J. D. Montgomery, Enid.

Late Fields

GREGG COUNTY WELL

FORT WORTH, Tex., Jan. 27.—Arkansas Fuel Oil Co. and others' No. 1 Lathrop, located in the William Robinson Survey in Gregg County, Texas, made 2,718 bbls. the first 18 hours, the last 14 of which the well was on a three-eighths inch choke. The well is now pinched in to 20 bbls. per hour, total depth 3,687 feet. Rusco Oil Co.'s No. 1 Bradford in the Juan Ximenes Survey, Rusk County, was swabbed for seven hours, and made 16 bbls., total depth 3,626 feet. This well is 1,400 feet southwest of the Joiner discovery.

CALIFORNIA

LOS ANGELES, Calif., Jan. 27.—Petroleum Securities Co.'s No. 2 Felix, a new well in the North Dome of Kettleman Hills, is expected to be officially completed within the next 24 hours, as it has been blowing into the air for the past three days for the double purpose of either loosening the oil string which froze on bottom or stimulating the flow of oil and gas. A preliminary test made Monday indicated that the well is flowing 2,000 bbls. of 32 gravity oil and 35,000,000 feet of natural gas per day from 8,100 feet. The initial production of this well is distinctly discouraging but the company is nevertheless still drilling ahead in No. 3 Felix despite the inability to finish a 10,000-bbl. well similar to the Superior's No. 1 Huffman.

OKLAHOMA

In the Wewoka townsite pool, in Seminole County, Droppleman, Lack and others' No. 1, in the SW cor. SE NW, Section 30-8-8, found oil at a total depth of 2,175 feet, where the well flowed 4,000 bbls. of fluid, mostly water in 24 hours. Owners estimated it was making about 200 bbls. of oil a day. The test may be drilled deeper as it is one location south of a Wilcox sand producer.

KANSAS

United Petroleum Corp. and Wolf Creek Oil Co.'s No. 1 Stucky, SW cor. SE, Section 9-21-3w, in Voshell Pool, McPherson County, on Shell Petroleum Corp.'s acreage, was swabbing 15 bbls. of oil an hour from the Simpson sand as

(Continued on Page 204)

YEARS ARE OMITTED

In the advertisement of Wailes Dove-Hermiston Corp. appearing on Pages 104 and 105 of this issue of The Oil and Gas Journal the dates were omitted inadvertently in that section of the advertisement on Page 105 entitled "A record that speaks for itself." The small section of pipe on the left side of this part of the advertisement represents the years 1926 and the year date "1926" should have appeared over that small piece of pipe. Likewise the years 1927, 1928, 1929 and 1930 should have appeared above the other sections of pipe in the order listed from the small piece of pipe on the left side of the advertisement to the large section on the right, the latter section representing 1930.

SCORE SHEET ON OIL PRODUCTION

Below is shown allotted average daily production in the United States from October 1, 1930, to April 1, 1931, suggested by the American Petroleum Institute's special committee on the economic situation, and the actual daily average production during the week ending January 24:

	Allotted (bbls.)	Actual (bbls.)	Over (bbls.)	Under (bbls.)
Okla., Kans., S.W. Tex., N. Tex.*	953,700	849,282	.....	104,418
W. Tex. and S.W. New Mexico	316,300	285,751	.....	30,549
North Louisiana-Arkansas	86,400	91,055	4,655	.....
Gulf Coast	177,800	180,558	2,758	.....
Rocky Mountain	58,600	57,966	.....	634
California	530,100	532,000	1,900	.....
Other fields	110,600	108,000	.....	2,600
Total	2,233,500	2,104,612	9,313	138,201

Net average daily underproduction, 128,888 bbls.

*North Texas includes North, Central and East Central Texas and Texas Panhandle.

Taking Potential of Oklahoma City

Twenty-four Hour Tests on 447 Out of 681 Oil Wells Show an Average of 9,100 Bbls. per Well. Limited Outlet

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Production is being kept within the requirements in the State with the past week's production ending January 24, showing approximately 466,500 bbls. a day average.

During the week Otto Bradford, umpire of the Oklahoma City Field, has been taking a 24-hour potential of the wells in the field and has completed tests on 447 wells which produced a total of 4,077,139 bbls., an average of 9,100 bbls. per well. There are 681 oil wells in the field and 160 wells drilling. One or more oil wells are being completed almost every day in the area. It has been proposed that production be increased to 10 per cent of potential.

According to the latest check the field has an outlet for only 300,000 bbls. of oil a day, through pipe lines and loading racks.

The only available large steel storage in the field is the Sinclair Oil & Gas Co.'s tank farm south of the field which can take approximately 2,000,000 bbls. of oil. The Cromwell-Franklin Oil Co.'s tank farm with eight 80,000-bbl. tanks were constructed last summer but never used. Lease storage in the field proper averages around 10,000 bbls. to the well, with a few of the companies having erected additional working storage.

During the week Anderson-Prichard Oil Corp. started construction work on a 6-inch gathering system for natural gas from its various properties in the north end of the Oklahoma City Field. The company plans to construct a gasoline plant in the north end of the field. Under the proration system the company's gas production is small although it has a large potential.

In the south end of the field the Skelly Oil Co. is completing its gas lift plant, the second it has constructed in the Oklahoma City Field. The first plant was completed on the Ainsworth lease in Section 10-11-3w, and serves wells in the north end of the field. Other companies are planning the construction of gas lift plants in the field since it is believed it is only a matter of time until artificial means of producing the wells will be needed. At the present time practically all of the Silicious lime wells are on the gas lift.

It is believed the water encroachment has been widening in the north end of the field and many of the sand wells are now showing traces of water. Plugging back on several leases is now in progress especially on the edge of the field and in the lime area. A recent check on the water situation shows about 9 sand wells making water.

Extend West Chandler Pool

Production in the West Chandler area was extended in the past week. The new well is a half mile south of production in the pool. The deep sand production was discovered about eight months ago when one of the 3,200-foot wells was drilled deeper and found the Simpson sand productive. Other tests were drilled deeper and the Wilcox sand was found to produce on the west side of the area. Potential production reached 22,000 bbls. a day the middle of last year and a curtailment program was agreed upon which allowed up development in the pool. The new extension well is Tom Slick Oil Co.'s No. 1 Althoff, NE cor. NW, Section 18-14-4, which started flowing at the rate of 1,000 bbls. of oil an hour, from the Simpson sand at 4,983-97 feet when the cement plugs were drilled. The well produced 312 bbls. of oil the first four hours.

The new well north of the Cromwell Pool, in Okfuskee County, Carter Oil Co. and others' No. 1 Keys, SW cor. NE SW, Section 11-11-8, was completed for 16 bbls. a day from the Hunton lime. The well is being pumped and was showing water. The well had been drilled to the Wilcox sand at 4,214-25 feet, where it found a hole full of water and was plugged back to 4,207 feet. The Atlantic Oil Producing Co. and others' community well, No. 1 Fixico, NW cor. SE, Section 15-11-8, in Seminole County, was fishing for a swab, with a showing of oil and water coming from the Cromwell sand at 3,523-24 feet.

The wild well inside the limits of Oklahoma City and in the north end of the field which was brought under control in eight hours last week, was preparing to rig up to kill the gas pressure with mud during the week. New connections will replace the die nipple connections which were stabbed into place when the well was shut in. The well is Tom Slick Oil Co.'s No. 1 Wespaco, NE cor. SW SE, Section 34-12-3w, on the edge of the business district. While the well was blowing wild photographic evidence of the damage done was made by a series of pictures from airplane. The spray from the well was photographed each time the wind changed by making a new set of pictures. The well is estimated to be good for 50,000 bbls. a day and the gas was estimated at 50,000,000 feet a day. It is taking the 65-day shut-in time under the proration order.

Watching Konawa Test

The Konawa Pool in Seminole County is again being watched with the possibility of new production looming on the southwest edge of the field. The prospects were bright for new tests since a recent completion on the edge of the pool is yielding large daily production. The field has had several drilling booms during the last year and a half.

Gypsy Oil Co.'s No. 1 Charty, NE cor. SE SW Section 29-6-6, which made the prospects of the southwest edge of the field look brighter, was opened and made 692 bbls. of oil by flowing in four hours from a total depth of 2,628 feet, and later flowed 2,464 bbls. in 22 hours. The owners expect to drill the test deeper. Another location was announced by the same company for No. 2 Charty, SE cor. SW Section 29-6-6, an offset to the No. 1 Charty.

Magnolia Petroleum Co.'s No. 1 Harjo, NW cor. SW SE Section 29-6-6, was shot with 100 quarts from 2,560-2,610 feet and started making a half a bailer of oil and seven bailers of water an hour.

Big Gasser in Little River

In the Little River area another large gas well was found during the week, with another test rigging up to drill deeper into the Wilcox sand horizon. Magnolia Petroleum Co.'s No. 3-A Harjo, NW cor. NE NE Section 14-7-6, is making 25,000,000 feet of gas with 680 pounds rock pressure. The gas is coming from between the 6 and 8-inch casing. The 6-inch casing was landed at 3,189 feet and the total depth of the well is 3,196 feet. The rotary drill pipe was frozen and an attempt was being made to loosen it.

Gypsy Oil Co.'s No. 4 Hulhoke, SW cor. SE Section 14-7-6, an old well, is being drilled deeper from a total depth of 4,207 feet in the Wilcox sand. The well is being drilled after it had exhausted its production from the present depth in the Wilcox sand in an effort to find another producing horizon.

Carter Oil Co.'s No. 7 Tewee, NE cor. NW NE Section 14-7-6, is cleaning out on bottom after finding a showing of oil in sand at 3,132-45 feet. It may be drilled deeper into the pay.

The largest gas well in the Wewoka Townsite Pool was opened during the week and gauged 81,000,000 feet of gas a day. The well is Deep Rock Oil & Refining Co.'s No. 3 Douglass (50a), SE cor. NW Section 30-8-8, and after being gauged was shut in again. The total depth of the well is 3,002 feet.

Interesting Kay County Tests

In Kay County two extensions to old pools and the possibility a new pool may be found if the tests now drilling find commercial production. It is believed the formations in the tests are running high on the structures. One of the tests is located in the extreme eastern part of the county near the Mervine Pool, Peters Petroleum Co. and others' No. 1 Hayes, NW cor. NE NW, Section 24-28-3, and it was drilling at 2,000 feet on the last report. It is about 1½ miles northeast of production in the Mervine Pool, and east of the Arkansas River. Production in the Mervine Pool is found in the Bartlesville sand. The second test is Mummert Drilling Co. and others' No. 1 McCormick, C NW SE, Section 9-27-2, which was drilling around 2,600 feet, 1½ miles northeast of production in the Blankenship Petroleum Co.'s No. 1 Randol, NW cor. SW, Section 17-27-2, which is making 60 bbls. a day and some gas from the Bartlesville sand at approximately 3,500 feet. The third test is Boucher Oil Co.'s No. 1 Jefferson, NE cor. SW, Section 32-26-1w, drilling at 1,150 feet after the rig had been skidded. The test may find shallow production in the area opening a new producing area.

Perry Area is Active

In the Perry area, Noble County, more work is under way than in any other section in the northern part of the State. Two new locations were announced during the week and the third is expected to be started in a few days. Twin State Oil Co.'s No. 1 Stewart, SE cor. NE, Section 5-20-1w, is a location in the Waltermire gas pool. The Magnolia Petroleum Co. has made a location for No. 1 Roberts, NE cor. SE, Section 21-21-2w, south of the same company's No. 2 Wolleson, a recent completion. In the same area Magnolia Petroleum Co.'s No. 3 Young, SW cor. NW, Section 22-21-2w, was spudding.

In the northeastern part of Noble County ponds were being dug at the Washoma Petroleum Corp. and others' No. 1 Otoe, SE cor. NE SW, Section 22-22-1. The location is a half mile east of the discovery well in the area. No. 1 Wentz, NW cor. SW, Section 22-22-1, flowed around 30 bbls. a day under proration. In the same area Prairie Oil & Gas Co. and others are landing 8-inch casing at 3,500 feet in Layton sand in No. 1 Upperman. A showing of oil was found in the top of the sand and water in the bottom. The test had 115 feet of Layton sand and after the casing is landed the well will be drilled deeper.

Northwestern Tests

The Empire Oil & Refining Co.'s No. 1 Bruce, C NE SW, Section 12-25-20w, Harper County wildcat, and the deepest test in the State, was shut down in the Mississippi lime at 7,935 feet. The formation is so hard that it has been necessary to change the bit as often as four times in 24 hours. The hole at the present time is in excellent shape.

The only active operation started in Grant County during the week was Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 2 Clark, NW cor. NE NW, Section 17-29-4w, which is spudding. The location is in the State Line Pool, on

(Continued on Page 181)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Drlg. 4,930 ft.

ATOKA COUNTY

Edgerton-Edwards' No. 1 Roland, C NW Sec. 9-1-15	Shut down 700 ft.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	Shut down 765 ft.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 480 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Fishing 2,570 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Shut down 4,590 ft.

CADDO COUNTY

Magnolia's No. 1 White, SW SE Sec. 25-6-10w	T. D. 5,012 ft.; plugged back to 3,065-3,100 ft.
Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McGraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Rig.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Drlg. 760 ft.

COMANCHE COUNTY

Croy & Young's No. 1 Cline, NW NE NE Sec. 8-3-10w	Shut down 2,221 ft.
O. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.

CREEK COUNTY

Burton-Holmes et al's No. 1 Sankeye, SE SW SW Sec. 5-18-10	Spudding.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	Drlg. 5,833 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w	Shut down 100 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,387 ft.

GREER COUNTY

French's No. 1 Murphy, SW NW Sec. 23-7-21w	Drlg. 1,235 ft.

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor. Sec. 17-4-24w	Shut down 2,593 ft.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w	Shut down 625 ft.

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w	Drlg. 7,935 ft.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-25-24w	20,000,000 ft. gas 5,350-5,400 ft.; total depth 8,589 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Shut down 50 ft.
I. T. I. O.'s No. 1 Blake, SW NW Sec. 3-10-21	Shut down 3,007 ft.
Mid-Western's No. 1 Poister, C NE SE Sec. 33-10-22	Shut down 4,297 ft.

(Continued on Page 174)

Possible New Field in Calcasieu Area

Gas Showings in Test in Iowa Geophysical Salt Dome Prospect on Jefferson Davis Parish Line. New Field in Cameron Parish

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Jan. 26.—Indications of a possible new field on the Gulf Coast were given late in the week by gas showings in a wildcat being drilled on the Iowa geophysical salt dome prospect on the Calcasieu and Jefferson Davis Paris line, southern Louisiana. The test, Vacuum Oil Co.'s No. 1 Wait, started to blow out and did blow three joints of drill pipe out of the hole before the pressure was shut in. Some damage was done the derrick which will necessitate building a new derrick. This will delay further work on the test several days so the importance of the discovery cannot be determined at this time.

This test is in a sandy shale showing oil and gas at 5,001-8 feet. The blowout started following the setting of one joint of screen preparatory to testing, and as drillers were coming out of the hole with the drill stem. In coming out the packer hung up around 2,000 feet. When derrick is rebuilt, efforts will be made to reset.

Location of No. 1 Wait is 225 feet out of the southeast corner of Section 12-9s-7w, on the Calcasieu Parish side of the line. This is the first test drilled on the prospect. Shell Petroleum Corp. made a location early last year but this was never drilled although material had been moved in for a derrick. Shell's location, No. 1 Heyd, was in Section 13 on the Jefferson Davis Parish side. The Iowa prospect was discovered by Shell Petroleum Corp. by seismograph during 1929.

Cameron Meadows Prospect

Although at present not of commercial importance, another new field was opened by Vacuum Oil Co. on its Cameron Meadows prospect in southern Cameron Parish, Louisiana, the past week. This company's No. 1 Cameron Meadows, 2,620 feet south and 1,960 feet west of the northeast corner of Section 21-14s-13w, was completed making 400,000 feet of gas and 100 bbls. of fluid, 2 per cent of which is oil, from a sand at 3,850 feet. Volume of the gas, however, has been increasing steadily. The well will be used to supply fuel for further development of the prospect.

This wildcat also is the first test drilled on this prospect, which was discovered by seismograph in 1928. The prospect is located in the swamps which fringe the Gulf of Mexico in the southern part of Cameron Parish. It can be reached only by boat haul out of Orange, Tex., and to get to it several miles of canal had to be dredged.

From the start, this wildcat has been one of the most interesting tests drilled on the Gulf Coast due to the succession of different oil showing sands which it encountered. The hole, started in November, 1929, was drilled to a total depth of 5,240 feet, where it was in oil sand, never tested due to parting of casing, which necessitated a sidetracking job. Numerous sidetracking jobs have been done due to twist-offs and casing breaks and in all more than 9,000 feet of hole has been drilled.

High Island Deep Horizon

Other interesting developments on the Gulf Coast during the week included the opening of an entirely new deep horizon at High Island, Galveston County, and showing production of an entirely different character than any yet found at that dome. This was in Gulf Produciton Co.'s No. 10 Smith, which blew in from a sand and shale at 5,911 feet making an estimated 2,500 to 3,000 bbls. of pipe line oil daily on a quarter-inch choke. Eight joints of screen were set at that level. Total depth of the hole is 6,018 feet but drill stem stuck there and the hole was sidetracked.

Most of the previous wells at High Island have failed to show any pressure and after comparatively short flowing lives have had to be put on the pump. This well has a pressure of 1,300 pounds and points to the development of a more favorable production on the dome.

The new well is in the M. Dunman Survey, 300 feet east and 50 feet south of Gulf's No. 5-T Smith, completed last April as the deepest well at High Island. It was in sand at 5,055 feet and flowed 1,055 bbls. on a half inch choke in the first 12 hours. Although the deepest well at that time, it did not open an entirely new horizon as No. 10 Smith has done. No. 5-A has proved an unusual well for High Island in flowing life as it only recently ceased flowing.

Barbers Hill

Barbers Hill added another good subsalt well late in the week in Mills Bennett Production Co.'s No. 3 Gulf Fisher, which came in flowing an estimated 1,300 bbls. of pipe line oil daily from sand at 4,374-4,437 feet. Production is through a half-inch choke. This well is located on the southeast flank of the dome. This tract is one of the best producing tracts in the field, the first well on this tract having proved one of the most consistent flowing wells of the field. This well is on the innermost circle of wells being drilled at Barbers Hill, located well up on the cap rock. It entered salt at approximately 1,900 feet and went out of it at 2,792 feet.

Of some interest at the close of the week was Humble Oil & Refining Co.'s No. 1 Gehring at Mykawa, southeast of the Houston city limits. This well was swabbing showing gas. It is in a sand at 4,870 feet with 30 feet of 7-inch (outside diameter) screen in the hole. The test, started on a tract owned by Harrison & Abercrombie, but which was sold to Humble Oil & Refining Co., offsets to the west Humble Oil & Refining Co.'s No. 3 Minnetex, the first commercial producer at this field. Mykawa is a torsion balance salt dome prospect, which was opened for production during 1929 by a gas well, which later sprayed a little oil. No. 3 Minnetex, the first commercial oil producer, was completed last August. It was in a sand at a total depth of 4,873 feet.

Refugio Field

In the Refugio Field in the lower Gulf Coast country, Moody-Seagraves Producing Co. further proved up the 6,400-6,500-foot horizon in its No. 1-A O'Brien, on the extreme east edge of the field, which came in flowing 1,478 bbls. of pipe line oil in the first 24 hours on five-sixteenths and one-four-inch chokes. Working pressure of the well is 1,175 pounds. Sand was at 6,450-60 feet and 15 feet of screen was set. This is one of the best of the series of 6,400-foot wells which have been and are being completed in this comparatively new development in the eastern part of that field. This well is one of the many which have been deepened from the 5,500-foot horizon, it formerly being a producer at 5,428 feet.

Another good 6,400-foot well was completed at Refugio in L. L. Smith's No. 1 Rogers, Block 87, of the town lots. This well came in flowing 650 bbls. daily on a one-fourth-inch choke from sand at 6,441-51 feet. Working pressure of this well is 1,900 pounds.

In the old part of the field in the heart of the 3,600-3,700-foot production, United Production Corp.'s No. 11 Fannie Heard has a sand at 4,872-80 feet which may open another producing horizon. Present horizons are at 3,700 feet, 5,400 feet, 5,600 feet, 5,900 feet and 6,400 feet.

Houston Oil Co.'s No. 1 Doughty, Block 23, of the townsite, tested salt water in the 6,400-foot sand at 6,452-65 feet and now is pulling screen. It will perforate casing higher up in an attempt to complete as a gas well. Houston Oil Co.'s No. 1-B Rooke, extreme southwest part of the field, which is in a deep sand at 6,197-6,205 feet, was drilling plug late in the week preparatory to testing. This is a rank wildcat as far as deep production is concerned as previous wells in the deep pay sands have been on the east side of the field.

The week at Refugio was marked by the making of a series of new locations for deep tests, among which are several in semiwildcat territory. One of these was T. P. Morgan's No. 1-B St. John heirs, located approximately a mile south of the main field. It is 200 feet from the north line and 1,558 feet from the east line of the tract, 400 feet west of Moody-Seagraves Producing Co.'s No. 1-A St. John heirs, a wildcat producer completed several months ago from the 5,500-foot horizon.

Production Decline

Production of the Coastal fields indicated a decline during the past week amounting to 2,409 bbls. in the daily average. Figures by fields were:

SOUTHEAST TEXAS

Allen	18
Barbers Hill	23,33
Batson	1,05
Big Creek	2,82
Blue Ridge	1,45
Brenham	14
Boling	96
Clay Creek	2,26
Damon Mound	59
DeWalt	11,53
Esperson	2,86
Fannett	39
Goose Creek	4,42
Hankamer	2,12
High Island	1,32
Hull	7,19
Humble	10,47
Lost Lake	41
Markham	20
Moss Bluff	54
Mykawa	22
Nash	21
North Dayton	66
Orange	5,12
Orchard	2,86
Pierce Junction	8,76
Port Neches	1,54
Raccoon Bend	8,91
Refugio	36,00
Rockland	
Saratoga	1,10
Sour Lake	2,02
South Liberty	2,77
Spindletop	13,14
West Columbia	4,24
Total Southeast Texas	152,89
Week ended January 17	153,04
Decrease	14

SOUTH LOUISIANA

Anse La Butte	6
Bayou Blue	11
Bayou Bouillon	9
Black Bayou	1,02
Edgerly	40
Jennings	76
Hackberry	4,09
Lake Barre	3,04
Lake Pelto	18
Lockport	5,18
Port Barre	1,77
Sorrento	5
Starks	66
Sulphur	2,36
Sweet Lake	1,14
Vinton	5,62
Welsh	7
White Castle	97
Total South Louisiana	27,66
Week ended January 17	30,01
Decrease	2,35
Total Gulf Coast	180,55
Week ended January 24	183,05
Decrease	2,49

Nash Dome

Production at Nash Dome, Brazoria County was extended westward by Harrison & Abercrombie's No. 27 Wisdom which came in flowing an estimated 500 bbls. daily. This well is in sand at 5,646-77 feet and has 33 feet of 4½-inch screen in the hole. This well was taken over by these operators from Ryeade Oil

(Continued on Page 180)

GULF COAST FIELDS AND WILDCATS

Week Ended January 24
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Prod. Co.'s No. 1-B Barber, north	Shale 3,957 ft.; reaming to bottom.
Mills Bennett Prod. Co.'s No. 3 Gulf Fisher, south	Set 63 ft. screen 4,437 ft.; comp. flowing 1,300 bbls. on ½-in. choke.
Mills Bennett Prod. Co.'s No. 5 Kiggins, southeast	Hard sand rock 1,489 ft.; repairing derrick.
Mills Bennett Prod. Co.'s No. 1 Gulf-Smith	Drlg. shale 4,668 ft.
Humphreys Corp.'s No. 2-B Barber, north	Drlg. salt 2,237 ft.
Humphreys Corp.'s No. 1 Louise Fitzgerald, north	Total depth 5,379 ft. in salt; drill stem stuck; sidetracked at 1,700 ft. and drlg. salt 2,044 ft.
Humphreys Corp.'s No. 2 Wilburn, southeast	Cmtd. surface casing 264 ft.
Humphreys Corp.'s No. 10-A Kirby (workover)	Drlg. shale and lime 5,946 ft.
McAlbert Oil Co.'s No. 8 Woodward, east flank	Spudded.
Republic Prod. Co.'s No. 1 Kirby (workover)	Set screen 5,192 ft.; to pump.
Rio Bravo Oil Co.'s No. 2 Fisher, west flank	Location.
Sun Oil Co.'s No. 8 Chambers, south	Rig.
Sun Oil Co.'s No. 1 Smith, west	Drlg. rock 3,698 ft.
Sun Oil Co.'s No. 14 Wilburn fee, east	Drlg. gumbo 229 ft.
The Texas Company's No. 1 Williams, southwest	Total depth 6,724 ft.; fishing drill pipe.
Yount Lee Oil Co.'s No. 10 Woodward, southeast	Drlg. gumbo 1,171 ft.
Yount Lee Oil Co.'s No. 17 Chambers, south	Drlg. shale and lime 4,396 ft.
Yount Lee Oil Co.'s No. 6 Phillips, east	Rig standing.
Yount Lee Oil Co.'s No. 1 Winfree, west	Sand and shale showing oil 5,450 ft.

RACCOON BEND—AUSTIN COUNTY

H. R. Flannigan's No. 2 Dietrich	Drlg. hard sand showing gas 1,036 ft.
Humble & Valley's No. 4 Diemar	Derrick.
Humble & Valley's No. 9 Mueller	Drlg. sand 100 ft.
Humble & Valley's No. 7 Payne	Derrick.
Humble & Valley's No. 8 Payne	Derrick.
Humble & Valley's No. 1 Martha Remmert	Derrick.
Humble & Valley's No. 3 Sherrod	Rig.
Humble & Valley's No. 4 Sherrod	Drlg. shale 2,687 ft.
Humble & Valley's No. 12 Thompson	Resetting screen 3,456 ft.
Humble & Valley's No. 6 Woodley	Derrick.
Humble & Valley's No. 7 Woodley	Derrick.
Humble & Valley's No. 8 Woodley	Derrick.
Humble & Valley's No. 9 Woodley	Derrick.

HUMBLE—HARRIS COUNTY

John Deering's No. 1 Graff (workover)	Heaving shale 5,634 ft.; drill stem stuck.
LaRue, trustee's No. 1 Crane, northwest	Derrick.

(Continued on Page 175)

A new belt construction for hardest oil field service

The unique construction of the new Goodyear Thor Belt, seamless*, provides a drive belt that is strong in the center. The surface plies enclose the inner plies and rigidly armor the belt from damage at the edges. There is no center seam—Thor, seamless, is guarded alike from splitting and from fray. In Thor is built all of the advantages of raw edge construction, plus a protected edge. It is made of heavy silver-duck—strong at the fasteners—cushioned, and staunchly buttressed with rubber. This is a standard heavy-duty belt for pumping and drilling—a belt for hardest service on low cost oil field drives.

Goodyear Thor Belting, seamless, as well as other Goodyear Mechanical Rubber Goods for oil fields is applied to your work by the G.T.M.—Goodyear Technical Man. He fits Goodyear Compass (Cord) Oil Well Belts to your idler-equipped beam-well drives and band-wheel powers—Goodyear Hy-Pressure Rotary Hose to rotary rigs. He saves time and costs—he builds greater profits. To learn of the value the G.T.M. can be on your location, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

**Goodyear Thor Belting, seamless, is made in widths up to and including 16"—Thor quality of special construction is available for larger sizes*

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS • MOLDED GOODS • HOSE • PACKING

Ritz Pool Has New 3,000 Barrel Well

Jones and Shell Petroleum Corp. Find Gusher in Chat. Little Progress Made at Statewide Curtailment Meeting

By W. A. Spinney
Staff Correspondent, Kansas Fields

Another gusher was completed in the Ritz Pool in McPherson County, Kansas, the last part of the week flowing at the rate of 3,000 bbls. a day. The well was E. F. Jones and Shell Petroleum Corp.'s No. 1 Flook, SW cor. NE, Section 1-20-2w, a half mile north of the No. 1 Miller, which was the first big producer in the Ritz Pool. The new well made 125 bbls. of oil an hour from the chat at 2,978-79 feet, and 7,000,000 feet of gas a day. The lease was owned by the Shell Petroleum Corp. but was farmed out to E. F. Jones and others to drill the first well. The top of the chat was found at 2,938 feet and the gas and oil gradually increased to 2,978 feet where the big pay was found. Owners plan to drill deeper, expecting the production will be increased.

Production from the State during the week ending January 24, totaled approximately 107,000 bbls. a day, compared to 107,410 bbls. the previous week. An increase in the State's production is expected after February 1, when the Voshell Pool curtailment plan expires.

Little Progress in Proration

A general meeting of oil producers was held in Wichita, Thursday to consider a statewide proration plan. At the beginning of the meeting T. C. Johnson, Kansas proration umpire and an independent oil operator, resigned. The operators refused to accept the resignation and prevailed upon him to continue. Mr. Johnson, in announcing his resignation, expressed the belief there would be more harmony among the producers if he resigned. The proration umpire is believed to have taken this action because of the situation in the Eastborough Pool, in Sedgwick County, east of Wichita, which is one of the flush pools in the State without any curtailment. One company operating in the area is said to have opposed Mr. Johnson's continuance in office.

Several attempts have been made to prorate production in the Eastborough Pool at different meetings of operators. These attempts have failed. Many express the opinion that no further attempt will be made to prorate Eastborough unless the State legislature enacts a law that will make compulsory curtailment possible. T. C. Johnson has served as state umpire for the past two years.

Producers at the meeting were divided on curtailment. About half of those present favored it as now being practiced, but all favored a co-operative agreement among all operators.

Among those in attendance at the meeting were R. E. Wertz, vice president of Producers & Refiners Corp.; F. E. Turner, general superintendent of Indian Territory Illuminating Oil Co.; W. O. Beall, attorney, of Sinclair Oil & Gas Co.; R. E. Slebby, Barnsdall Oil Co.; J. L. Moore, of the crude oil purchasing department, Shell Petroleum Corp.; R. B. Roark, of Shell Petroleum Corp.; J. N. McGirl, W. C. McBride, Inc.; Rush Greenslade, vice president, Gypsy Oil Co. and H. W. Klein, vice president, Stanolind Oil & Gas Co.

Following the meeting the Voshell operators got together to discuss their problem of the crude oil outlet. It was decided that a five-day potential test be made commencing February 1, and that thereafter the allowable production of all companies will be rated on a basis of the highest percentage of potential any one company shall take.

McPherson a Busy Area

McPherson is the most active oil county in the State at the present time. The new development is the result of recent completions which have a large initial production from two pay horizons, the chat and the Simpson.

Several of the new and important operations in the county are, Joe Rush and others' No. 1 Russell, C SW SE, Section 1-19-1w, a rig; Madison Petroleum Corp. and Shell Petroleum Corp.'s No. 1 Russell, C SW SW, Section 1-19-2w, preparing to spud; Graham Brothers' No. 2 Rolander, SW cor. NW SW, Section 30-18-2w, a rig; Gurley and Labergayer's No. 1 Rosenberg, NE cor. NW, Section 31-18-2w, a rig.

The Decker area, which is fast becoming one of the important gas producing fields in the State, now has a potential production of better than 300,000,000 feet of gas a day. Several new operations started drilling during the week including the Broswood Oil Co.'s No. 2 Griffin, SW cor., Section 14-19-2w; W. C. McBride, Inc.'s No. 2 Griffin, SE cor. SW, Section 14-19-2w; McPherson Oil & Gas Co.'s No. 1 Salthouse in the SW Section 15-19-2w, and Stearns & Streeter's No. 1 Chinberg, NE cor. NW, Section 15-19-2w.

In the Ritz area, McPherson Oil & Gas Co.'s No. 1 Finkle, NE cor. NW, Section 25-19-2w, is spudding. Shell Petroleum Corp. and Syndicate Oil & Gas Co.'s No. 1 Becker, SE cor., Section 36-19-2w, is spudding. Otstot and Poling's No. 12 Munn, SW cor., Section 6-20-1w, was drilling at 1,000 feet.

C. B. Davis and Shell Petroleum Corp.'s No. 1 Ritz, SE cor. SW, Section 19-19-1w, a half mile north of production in the Ritz area, was fishing for tools at 1,350 feet.

Henderson & Holden's No. 1 Sommerfield, NE cor. SW, Section 23-19-1w, is fishing underreamer lugs at 2,917 feet, near the chat formation.

The Reserve Oil Co. and Shell Petroleum Corp.'s No. 1 Ritz, SE cor. NW, Section 31-19-1w, an extension well in the area between the Ritz Pool and the deep sand producers, swabbed 60 bbls. of oil and 57 bbls. of water the first 24 hours. The production was found in the chat at 2,938-3,017 feet.

Aladdin Petroleum Corp. and others' No. 1 Larson, C NW, Section 22-18-4w, a wildcat in the northwest part of the county, is a rig.

Western Wildcats

In the wildcat area in western Kansas the deepest tests are in Gove County. Valerius and Boucher Oil Co.'s No. 1 Todd, NW cor. Section 24-13-27w, found a hole full of water at 4,671 feet. The hole was drilled to a total depth of 4,813 feet, where it is being abandoned. The test was high on the structure in the upper formations but when it reached the Lansing formation began to log low. The lower section thickened, indicating to the owners that somewhere in the area commercial production may be found. Atlantic Oil Producing Co. and T. C. Johnson's No. 1 Wright, SE cor. NE Section 11-12-27w, was drilling at 4,300 feet on the last report. The test is said to log lower on the structure than the Valerius' and others' test.

The Agate Oil & Gas Co.'s No. 1 Rockefellow, SE cor. Section 6-13-12w, Russell County wildcat, recently purchased from the Austin Oil Corp. together with 1,280 acres under and around the test, has landed 6-inch casing at 3,045 feet and is shut down. A showing of oil was found in the Oswald lime at 3,044 feet, just before the transaction was made. The test is believed to be logging high on the structure and if commercial production is not found in the upper formations the test will be drilled to the Silicious lime. The test will be completed as soon as the titles to the leases in the block have been approved. It is apparent that new producing areas in Russell County are expected to be developed with the coming of normal conditions in the industry.

Kingman County wildcats which have been in the limelight during the last few weeks are being watched. The Aladdin Petroleum Corp.'s No. 1 Schrag, a wildcat in Section 16-27-5w, in the northeastern part of the county, is shut down with a hole full of water. The operators found an increase in the water at 4,185-89 feet in the Viola lime, and failed to shut off the water when the casing was landed. The test was drilled deeper with the hole full of water finding sand from 4,193-9[illegible] feet.

In the Eastborough Pool, in Sedgwick County, Derby Oil Co.'s No. 1 Cloud, SE cor. SW Section 19-27-2, which was a chat producer is being drilled deeper. The test reached a total depth of 3,283 feet in the Simpson sand and was shut down. The work will be resumed when the 6-inch casing is landed.

No Outlet for the Oil

Skelly Oil Co.'s No. 1 Miles, NE cor. Section 30-27-10w, Kingman County wildcat, has been shut in by the owners. The well is estimated at 800 bbls. a day at the present depth of 3,441 feet. All the available 2,000 bbls. of storage on the location is filled with oil, no pipe line connection is available and the owners consider it uneconomic to lay gathering lines and build a loading rack to handle the crude. The first oil was found at 3,386 feet, and it was slowly drilled deeper to the present depth. The well is producing from the Lansing formation. The first 24-hour gauge was 350 bbls. when the total depth of the well was 3,396 feet. The well made as high as 90 bbls. in an hour and a half from its present total depth. The big pay was found in the last few feet in the Lansing lime.

In the Ritz Pool in McPherson County, E. F. Jones and Shell Petroleum Corp.'s No. 1 Flook, SW cor. NE, Section 1-20-2w, was estimated to be making 3,000 bbls. a day from the chat at 2,978-79 feet. The top of the chat was found at 2,939 feet and at 2,964 feet the gas was estimated at 7,000,000 feet a day. It started flowing at the rate of 25 bbls. an hour and increased to 125 bbls. an hour when drilled to the present total depth.

Fisher & Laucks' No. 2 Schafer, NE cor. SE NW, Section 30-27-2, a twin to a chat well, pumped 550 bbls. in 12 hours from the deep Simpson sand at 3,256-61 feet. On swabbing test the well swabbed 550 bbls. in 12 hours.

Cowley County

H. R. Allen and others made location for No. 1 Bice, NE cor. SW, Section 29-30-6. Hough and others moved a machine in for No. 1 Thurlow, SW cor. SE Section 35-32-4. Mid-Kansas Oil & Gas Co.'s No. 1 McMinn, C SE SW, Section 16-31-6, has been completed for 1,500,000 feet of gas in sand 2,480-85 feet after plugging back from 2,535 feet. Roth & Faurot's No. 3 Holt, NE cor. NW SE Section 12-32-4, made a 50-bbl. well in the Kansas City lime 2,495-2,573 feet. No. 4 Holt, NW cor. SE, Section 12-32-4 has been completed for 190 bbls. in Penn sand 2,345-65 feet. Suppes and others No. 1 Graham, SW cor. NW SE. Section 33-32-7, made 70 bbls. in sand 1,943-70 feet. Home Natural Gas Co.'s No. 1 Baird, NW cor. NE, Section 32-34-3, has been abandoned at 1,693 feet.

Franklin County

Fields and others' No. 1 Usher, SE cor. Section 35-16-17, is a machine on the location.

Greenwood County

Polhamus and others' No. 1 Smith, SE cor. NE SW, Section 7-24-11, is a rig. Harper & Dick's No. 1 Branson, CW SW NE, Section 3-25-11, has been abandoned at 1,875 feet.

McPherson County

Moriarty and others staked location for No. 1 Sadey, C SW SW, Section 2-19-2w. W. C. McBride, Inc., is moving material in for No. 1 Thompson, C NW NW, Section 12-19-2w. McPherson Oil & Gas De-

(Continued on Page 180)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

BARBER COUNTY

Company, farm and location—	Remarks:
Allison & Fitzwilliams' No. 1 Kumberg, SE SW SE Sec. 2-30-12w	Drlg. 4,763 ft.

BARTON COUNTY

Syndicate Oil Co.'s No. 1 Boertz, NW SE SE Sec. 13-18-12w	Shut down 50 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Drlg. 1,490 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.

BUTLER COUNTY

Farrell et al's No. 1 Sutton, NW cor. Sec. 18-28-7	Drlg. 2,000 ft.

CLARK COUNTY

Watchorn's No. 2 Morrison, NW NE Sec. 20-32-21w	T. D. 6,909 ft.; plugged back to 6,530 ft. to test show gas; abnd.

CLAY COUNTY

Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Shut down 2,390 ft.

COFFEY COUNTY

Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,300 ft.
Roberts et al's No. 1 Hay, SW SE NW Sec. 32-22-15	Shut down 1,250 ft.

COWLEY COUNTY

Roth & Farout's No. 1 Reedy, SW NW NE Sec. 8-32-8	Shut down 1,040 ft.
Tom Fiae's No. 1 Boyd, NW NE Sec. 23-32-4	Shut down 2,650 ft.

DICKINSON COUNTY

Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Shut down 3,460 ft.

ELLSWORTH COUNTY

Hershey et al's No. 1 Schultz, C NE Sec. 9-14-8w	Rig.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Shut down 50 ft.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Shut down 1,130 ft.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Fishing 330 ft.
Aladdin and Carter Oil Co.'s No. 1 Barecky, C NW Sec. 3-16-10w	Shut down 2,718 ft.

FORD COUNTY

Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Shut down 4,315 ft.

GOVE COUNTY

Johnson and Atlantic's No. 1 Wright, SE NE Sec. 11-12-27w	Drlg. 4,290 ft.
Valerius & Baucher Oil Co.'s No. 1 Todd, NW cor. Sec. 24-13-27w	Drlg. 4,755 ft.

GRAHAM COUNTY

Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Fishing 3,790 ft.

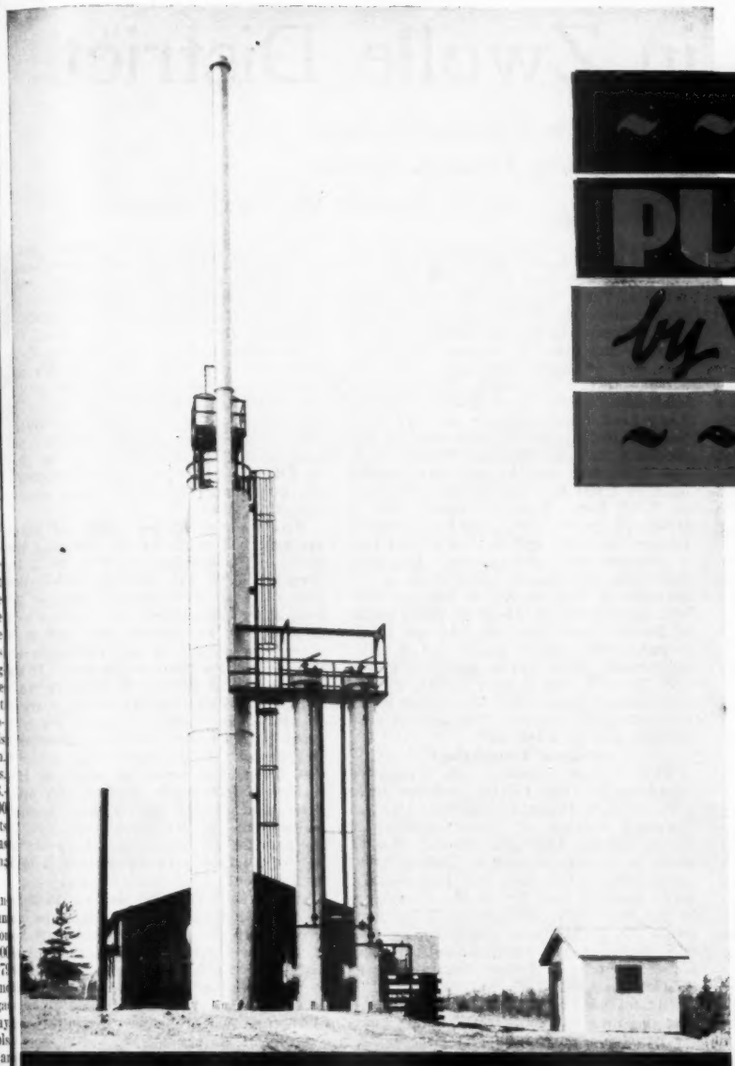
HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-36-6w	Shut down 1,830 ft.

HARVEY COUNTY

Empire-Shell's No. 1 Showalter, NW SE Sec. 23-23-2w	Rig on ground.

(Continued on Page 207)



LIQUID PURIFICATION by WESTERN GAS

A Recent Seaboard Process Installation for Natural Gas at 300 lb. Pressure,

This plant being isolated and far removed from other industries all of the equipment is gas engine driven, as illustrated in the machinery room photo shown below.

The removal of hydrogen sulphide from natural gas and refinery gas eliminates the undesirable properties of sour gas and renders it non-poisonous, non-corrosive and suitable for domestic and industrial uses.

"Western Gas" Designs and Builds –

ABC Generator Grates	Liquid Purification Plants
Blue Water Gas Plants	Napthalene Removal Plants
Blast Gates	Oil Foggers
Carburetted Water Gas Plants	Oxide Boxes (Purifiers)
Condensing Apparatus	Tower and Rotary Scrubbers
Gas Dehydration Plants	Valves, Gate and Butterfly
Holders (Gas Oxygen, etc.)	Welded Steel Pipe, etc.

The Western Gas Construction Co.

SUBSIDIARY OF THE BARTLETT HAYWARD CO.

E. PONTIAC STREET
FORT WAYNE, INDIANA

Wildcat Failures in Zwolle District

Two New Gassers in Mississippi May Be Markers in Jackson Area. New Interest Shown in East Texas Counties

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Jan. 26.—Fatalities among the wildcats were heavy this week and completions in proven territory were distressingly similar except in one or two cases. And, maintaining the rate prevalent for the last several weeks, there were few new jobs begun. Zwolle wildcat territory had most of the failures and at the same time produced a small extension of the farthest southeast producing "hickey" of the group of highly localized, widely scattered pools that are Zwolle. The Texas Company's No. 1 Stoker in the NW cor. NW SE, Section 10-7-11, pumped 30 bbls. initial from 2,550 feet. Location is about a quarter mile southeast of the discovery well in the section and the new producer is the second in the section. The two are a little over a mile southeast of nearest production. Two new gassers in Mississippi had characteristics unlike any of their predecessors in the Jackson Field and may or may not be significant in a variety of ways. Panola County, Texas, gas field had a small producer in the deep Trinity stuff and one equally as small in the older 2,200-foot zone. Ohio Oil Co. scored one of its few failures in Champagnolle Pool of Union County, Arkansas. Altogether, it seems that the pendulum reached the other extreme in swinging from a high average of successful operations.

H. I. Morgan's success in exploring the deep Trinity on the southwestern flank of Bellevue Dome in Bossier Parish hit a snag with No. 10-B Kendrick which was abandoned after a salt water test at 1,934 feet. He had completed it two months before as a gas well gauging nearly 42,000,000 feet at 760 pounds, total depth 1,750 feet. But it did not last but a few days. Salt water drowned it out and tests at 1,829 and 1,899 feet had the same result. However, he has rig up for No. 12-B Kendrick in the NE SW, Section 22-19-11, which is same location as No. 10-B Kendrick. R. O. Roy made location for another wildcat in the Lake Bisteneau area of southern Bossier Parish, No. 1 W. H. Hodges, at the center of the NW NW, Section 19-16-10, approximately 3 miles east of nearest gas in the Elm Grove Field.

Claiborne Test Dry

Prairie Oil & Gas Co. abandoned as a dry hole the first of the tests it is obligated to drill on the Tom Slick block in northeastern Claiborne Parish in which 3,6000 acres it has a half interest. No. 1 Shackelford in the SE NE, Section 30-23-5, 16 miles east of Haynesville production and about 20 miles northeast of Homer, went 150 feet beyond the 5,000-foot contract depth and quit without having had a show of anything anywhere along the log. According to some geological talent there was no reason to ever think it would show anything, but there was just as much expert opinion arguing the other side. It is understood the company will drill one, possibly two, more tests this year before surrendering the leases, the next one to be 2 or 3 miles northeast of the Shackelford Naborton territory of DeSoto Parish, where the first production after Caddo was found in North Louisiana in 1912-13, and is location for a wildcat and another test in proven territory. Dupree Fountain has derrick up for No. 1 Nabors in the NE NW, Section 5-13-11, 4 or 5 miles west of old Abington production that was a part of the Red River excitement of 1919-20, and Ernest Nickleson is rigging up to drill No. 1 Nabors in the SW SE, Section 32-13-11, in the old Naborton Pool.

Developments at Zwolle

Here is the story of the work's developments at Zwolle. Tom David abandoned No. 1 Holliday, SW NW, Section 31-8-12, in proven area, which had been shut down at 1,350 feet for the last six months. Essco Petroleum Co.'s No. 1 Louisiana Long Leaf Lumber Co. in the SW SW, Section 35-8-11, the farthest east location in the whole area and which was the cause of some excitement two or three weeks ago when it had a show at 2,420 feet, bailed dry, and another at 2,600 feet with the same result, was abandoned. Eylers Oil & Gas Co.'s No. 1 Frazier in Section 10-8-11, 6 miles or more northeast of nearest production, was dry at 2,650 feet and abandoned after a test in the marl. Pelican Natural Gas Co. abandoned No. 7 Louisiana Long Leaf Lumber Co. in the NW NW, Section 10-7-11, half a mile west of the section's two producers. Total depth was 2,600 feet and the hole was plugged back to 1,400 feet and made a dry test at 1,435 feet. Pugh Hickman's No. 2 Sabine Lumber Co., Section 34-8-12, proven territory, will not be drilled and is dropped from the reports. Magnolia Petroleum Co. had a small show of oil at 2,595-99 feet in No. 1 Lucius, NW NE, Section 2-5-12, about 15 miles south of Zwolle production, but did not think enough of it to make a test and is drilling ahead. The Texas Company's No. 1 Stille, NE NW, Section 3-7-11, a mile northeast of production, was dry at 2,475 feet and going deeper. This nearest production was at 2,446 feet.

Arkansas Completions

Two failures summed up Arkansas completions. Ohio Oil Co. had bad luck with No. 11 Crain in Section 1-17-14, discovery section of Champagnolle in Union County, testing 1,500 feet of salt water in the second sand at 3,160-69 feet, total depth 3,185 feet, but immediately made location for No. 5 R. Pumphrey in the NW NW, Section 12-17-14, just south of the failure. Marine Oil Co. will probably get another well in the Urbana district of Union County, No. 3-B Thompson SE NE, Section 10-18-13, coring oil sand at 3,554-57 feet and setting 6⅝-inch at 2,551 feet. A. B. Turner, trustee, abandoned No. 1 Brown, SE SW, Section 23-15-18, a wildcat in the Mount Holly area of Ouachita County, a mile northwest of production at 2,931 feet, in the red beds.

To go back to Zwolle for a moment—Loring Oil Co.'s No. 15 Bowman-Hicks, NW SE, Section 2-7-12, within proven territory, but about a mile from nearest production north and south, was one of the big surprises of the district in that it was a gasser estimated at 10,000,000 feet open flow with a spray of oil from a new shallow depth of 2,248 feet. Zwolle never has had much gas and this total depth is the shallowest of any well in the territory, checking from 60 to 100 feet higher than the nearest producers. Top of the marl, Zwolle's shallow pay, was at 2,234 feet and top of the chalk at 2,244 feet. It is another instance of the fact that "you never know what to expect in Zwolle."

Up in the northeast corner of Arkansas and just south of the Missouri line, S. C. Jeffus has gone back to No. 1 Underwood, NW SE, Section 4-20-8, Clay County, and is drilling deeper at 337 feet, after abandoning the wildcat as a junked hole at around 300 feet where there was a puff of gas that gave rise to reports of a commercial well. It was reminiscent of Letona Syndicate's No. 1 Letona in White County which, a couple of years ago, caused a great scurrying when it was reported in as a 25,000,000-foot gasser. It did have some gas, several times, but never so much as that by far. Jeffus has drilled two other wells near No. 1 but without success. Smitherman & McDonald, who opened Haynesville 10 years ago, have set 50 feet of surface pipe on a rank wildcat in Lafayette County, Arkansas, No. 1 Reed in the NW NW, Section 16-15-22, 10 miles northeast of Stamps and approximately the same distance southwest of Nevada County production at Irma. Little River County's one wildcat, G. R. Stephens and others' No. 1 Greason, Section 25-12-32, inactive since last July until recently when the new owners started cleaning it of junk, has revived and is drilling at 2,767 feet toward its new contract depth of 3,500 feet. Roberts Oil Co. made location in the NW NW, Section 32-12-29 for No. 1 H. J. Russell on the outskirt of Ashdown, the county

(Continued on Page 181)

LOUISIANA-ARKANSAS PROVEN AREAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BOSSIER PARISH—BELLEVUE

Company, farm and location— Remarks—

H. I. Morgan's No. 12-B Kendrick, 2,440 ft. E, 1,720 ft. N, SW cor., Sec. 22-19-11 ..... Rig up.

BOSSIER PARISH—CARTERVILLE

Del.-La. Dev. Co.'s No. 6 Bollinger, 320 ft. S, 220 ft. W, NW cor., Lot 17, in Lot 16, Sec. 31-23-11 ..... Hole full oil; W.O.S.R; 15 ft. broken sand; T.D. 3,217 ft.

BOSSIER PARISH—SLIGO

United Prod. Co.'s No. 1 Treat et al, 600 ft. S, 705 ft. E, NW cor. NW NE, Sec. 14-17-12 ..... Began drlg. Jan. 16; cmtd. 12½-in. 166 ft; drlg. 1,620 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Edgar, 1,460 ft. S, 1,900 ft. E. NW cor., Sec. 17-16-16 ..... Location.

Calatex O. & G. Co.'s No. 1 McAnn-Alfred, 1,310 ft. S, 970 ft. E, NW cor., Sec. 17-16-16 ..... Location.

Junior O. & G. Co.'s No. 1 Breard, 1,930 ft. W, 1,320 ft. N, SE cor., Sec. 9-18-16 ..... Drlg. sandy lime and shell 2,690 ft.

CADDO PARISH—PINE ISLAND

Haynes Bros.' No. 2 Spell, 956 ft. W, 200 ft. N, SE cor. SE, Sec. 15-21-15 ..... Cmtd. 4½-in. 3,958 ft; 2-ft. sand; T.D. 3,962 ft.

Shreveport Oil Corp.'s No. 7 Hicks, 1,100 ft. N, 1,200 ft. W, SE cor. NE NW, Sec. 32-21-15 ..... Rig up.

The Texas Co.'s No. 8 J. F. Herndon, 990 ft. N, 990 ft. W, SE cor. SW, Sec. 14-21-15 ..... Fishing D.S; T.D. 3,902 ft.

CLAIBORNE PARISH—HOMER

La. Oil Ref. Corp.'s No. 1 Langston, 660 ft. S, 528 ft. E, NW cor. SW SW, Sec. 19-21-7 ..... Drlg. hard shale, streaks sand 3,100 ft.

DE SOTO PARISH—HOLLY

Standard Oil Co. of La.'s No. 5-A Farmer, 300 ft. N, 350 ft. E, SW cor. SE SW, Sec. 32-14-13 ..... Began drlg. Jan. 14; cmtd. 10-in. 42 ft; drlg. 1,760 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4 ..... Location.

OUACHITA PARISH

Bahan & Bahan's No. 1 Smith, 249 ft. W, 535 ft. N, SE cor. SW, Sec. 24-18-9 ..... Rig up.

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4 ..... Location (reported drlg. in error)

(Continued on Page 206)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location— Remarks—

Coyle Bros.' No. 1 Lawhon, 300 ft. N, 300 ft. E, SW cor. SE NE, Sec. 15-16-8 ..... Drlg. broken lime 2,520 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14 ..... S.D. fuel 1,576 ft.

Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13 ..... Set 6⅝-in. 1,031 ft; dry; arranging to deepen; T.D. 1,100 ft.

R. O. Roy's No. 1 W. H. Hodges, C NW NW, Sec. 19-16-10 Derrick.

CADDO PARISH

R. H. Libby's No. 1 Foster (was Gooch et al's), Sec. 29-15-16 ..... Cmtd. 12½-in. 60 ft; S.D. 1,600 ft.

Tex.-La. Prod. Co.'s No. 1 Wall, 2,175 ft. N, 1,980 ft. W. SE cor., Sec. 33-23-16 ..... Drlg. anhydrite, streaks of lime 5,233 ft.

CALDWELL PARISH

Hudson et al's No. 1 Burton, Sec. 35-12-2e ..... S.D. 2,600 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6 ..... Tested S.W; W.O. 3,046 ft.

CLAIBORNE PARISH

Baird Bros. et al's No. 1 Whittaker, 600 ft. N, 400 ft. W, SE cor. NE, Sec. 30-20-7 ..... S.D. 2,200 ft.

Baugh et al's No. 1 Alexander, 330 ft. S, 330 ft. W, NE cor., Sec. 27-20-8 ..... S.D. 2,200 ft.

CONCORDIA PARISH

Joe Marr et al's No. 1 Maxwell, C, Sec. 35-3n-8e ..... S.D. 3,622 ft.

DE SOTO PARISH

J. W. Clark's No. 1 Tidwell, 250 ft. S, 250 ft. E, NW cor. NW, Sec. 22-13-14 ..... Drlg. shale 3,260 ft.

Dupree-Fountain's No. 1 J. M. Nabors, 250 ft. S, 250 ft. W, NE cor. NW cor., Sec. 5-13-11 ..... Derrick.

S. A. Guy's No. 1 Dowling Bros., 469 ft. E, 382 ft. S, NW cor. NE, Sec. 31-14-14 ..... S.D; sandy shale 1,354 ft.

Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Welchert's), NE SE, Sec. 31-14-15 ..... S.D; repairs 2,306 ft.

C. D. Neff et al's No. 1 H. P. Dowling, 240 ft. N, 240 ft. W, SE cor., Sec. 18-13-14 ..... Drlg. shale and lime 2,685 ft.

C. D. Neff et al's No. 1 Ramsey, 1,000 ft. W, 400 ft. S, NE cor. SE, Sec. 33-12-16 ..... Cmtd. 12½-in. 80 ft; drlg. 400 ft.

Ernest Nickelson's No. 1 Nabors, 1,200 ft. N, 1,800 ft. W, SE cor., Sec. 32-13-11 ..... Rig up.

(Continued on Page 206)

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GENERAL OFFICES: HOUSTON, TEXAS

Get Big Gas Well in Zapata County

Completion 2 Miles East of Escobas Pool Estimated Over 60,000,000 Feet. Drilling Activity on the Increase

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Jan. 26.—S. R. C. Oil Co. brought in a whale of a big gas well in Zapata County 2 miles east of the Escobas Pool at 1,670 feet last week, the well being estimated at 60,000,000 to 70,000,000 feet, one of the biggest ever completed in that territory. It is No. 2 F. Cuellar, located in Survey 19 about three or more locations south of the Fansler well in Survey 285 brought in a year ago at the same depth. These two wells are the only ones in that spot.

T. B. Slick estate is interested in the S. R. C. Oil Co. The well got loose and ran wild for a time but was later got under control. The size of it, if nothing else, will attract attention to that area and the chance for a new line of big play in northeastern Zapata County. Survey 314, located about a mile north and directly across the path of any pool if it extends in that direction, was bought by a major company some months ago at a fancy price.

In addition to the S. R. C. well producing at 1,670 feet while the Escobas Pool is producing at 1,300 feet, there were two wildcat tests in the Balcones fault zone northeast of San Antonio tamed into a civilized state of production this week. They are both small wells. One is Blount & Mills' No. 1 McMahon in Caldwell County, southwest from the Dale Field and on a line between it and the old Luling Field. It has looked like a possibility for the past few weeks. At total depth, 2,200 feet, with casing set at 2,138 feet and top of chalk at 2,115 feet, it is on the pump and good for about 25 bbls. It is in an area where the geology is very plain and many operators have been attracted to it in years past with the result that, if dry holes surrounding it mean anything, it will be impossible for a pool of any size to be developed.

The other well is in Falls County at the extreme north end of that part of the Balcones fault zone where the Edwards lime is considered a possibility. Eddington and others' No. 1 Llewellyn was really completed late in December for 10 bbls. but additional work has brought it up to 32 bbls. and it is 32 gravity oil. The well is in the George Allen Survey and 4 miles southeast of Chilton. Near Chilton several years ago a small amount of oil was found in a wildcat but nothing in the way of a pool developed from it. Total depth of the new well is 1,055 feet and it has sand from 1,040 feet down to the bottom. The same operators will drill another test at once.

Drilling Activity on Increase

As was reported last week, so again this week, there is a further noticeable increase in activity. There are a number of old tests and old deals that have remained quiet for months starting up again.

Jim Harper is going to drill another well in the Lytton Springs Townsite Pool. Luling Oil & Gas Co. is going to drill east of the Darst Creek area where it is counting there is a structure.

Fort Bend Oil Co. is working again on No. 1 Newberry, 6 miles north of the Pettus Field and just over the line in Karnes County, and the hole has been deepened to 3,050 feet and the screen reset.

Two other deals in Karnes County that have been standing idle for months are getting ready to start again, one the Morrisey test which will be under new management, and Linden Petroleum Co. which drilled No. 1 Hensley in Gonzales County last year and is getting ready to test the block of leases with another hole.

Laredo District

There were only two producers completed in the Laredo territory besides the big gasser and both were by O. W. Killam and in the Killam-Cuellar Pool in Zapata County, one No. 38-B Cuellar for 100 bbls. at 1,583 feet, and the other No. 39-C Cuellar for 20 bbls. at 1,580 feet, in the regular sand of the field. The first is in Survey 277 and the other in Survey 278.

In the southwestern part of the Escobas Pool, where J. H. Winch was about to complete his No. 3 Bustamente in a deeper sand at 1,430 feet, 130 feet deeper than the regular sand of the field, the last word from the field was that he was bailing. The sand being a new one in that district, it may open a new pool to the southwest of the Escobas as S. R. C.'s No. 2 F. Cuellar was 2 miles to the east of Escobas.

O. W. Killam in Survey 77 of Webb County in the territory near the town of Bruni in sand at 2,949-55 feet on a drill stem test got 1,000,000 feet of gas in his No. 1 Bruni. Mr. Killam and other operators have found one good gas sand at around 2,350 feet in that territory. This seems to be the first at 2,955 feet.

In southwestern Brooks County Ed East's No. 3 B. Garcia is down to 1,002 feet and standing. It was at only a little greater depth that his No. 1 B. Garcia came in a year ago for 23,000,000 feet of dry gas and opened a new field. No. 2 Garcia was drilled to only 400 feet and abandoned and his No. 3 is the first test to go to the vicinity of the producing sand.

Duval and Zapata

The only other territory attracting out of the ordinary attention is northern Duval and northern Zapata Counties. In northern Duval County Vacuum Oil Co. is down 3,600 feet in its No. 1-A on Survey 280, 4 miles southwest of the discovery well drilled some months ago by S. R. C. Oil Co. and Vacuum Oil Co. The test on Survey 280 failed to get pay just below 1,700 feet where the discovery well became a producer and has had nothing notable below that.

Frasher & Schoolfield are getting ready to start their second test in Survey 135, 1½ miles south of the Schoolfield-O'Byrne Pool, where they recently brought in a big well, and Al Buchanan may drill another test 8 miles northeast of the Schoolfield-O'Byrne Pool, where he recently drilled one hole and had a good showing a little below 1,500 feet.

In northern Zapata County, 12 miles west of the Mirando Valley Pool, O. W. Killam is down 2,050 feet in his No. 2 Slator. Extending south from that, National Oil Co. has a location in Block 9 of the Da Pron subdivision and has spudded in and the chances are there will be a number of other tests between that and the Rio Grande.

Production

Daily average production of the pools in the Southwest Texas area for the week ending January 24:

Agua Dulce	20
Bexar County	22
Branyon	20
Bruner	14,13
Buchanan	10
Chapman	4,82
Dale	28
Darst Creek	31,69
Gollad County	20
Kingsville	12
Larremore	10
Luling	9,20
Lytton Springs	72
Manford	15
McMullen County	2
Medina County	2
Mirando district*	13,27
Normanna	2
North Pettus	27
Pettus	7,75
Saxet	7
Somerset	1,32
S. R. C.-Vacuum	16
White Point	4
Yoast	21
Total Southwest Texas	84,96
Week ended January 17	86,11
Decrease	1,21

*Includes Charco Randado, Jennings and Mirando Valley of Zapata County; Albercrass, Aviator, Caroline-Texas, Mid-O-Juelon Schott and Wolcott of Webb County; Alworth, Henne-Winch-Fariss and Randado of Jim Hogg County; Cole, Driscoll, Kohler and Schoolfield O'Byrne of Duval County.

Coast Counties

Houston Oil Co.'s No. 1 Hunter, west of the Saxet Field in Nueces County, is gauging 175 bbls. of oil on one-eighth inch choke at 4,079 feet and the oil is 24 gravity. It is so far removed from

(Continued on Page 180)

SOUTHWEST TEXAS PROVEN AREAS

DOBROWOLSKI POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Morgan Bros.' No. 3 Masterson, 300 ft. S of No. 2 Masterson, Miguel Gortario Sur.	T. D. 550 ft.; set csg.
F. H. Eckert's No. 1 Dobrowolski, 400 ft. from W line, 150 ft. from S line of lease, Sur. No. 52	Location.
W. R. Swearingen's No. 2 Halberdier, 300 ft. SE of No. 1, I. J. Perege Sur.	T. D. 460 ft.; standing.
A. J. Swearingen's No. 6 Sandemer, 600 ft. S of No. 1, M. Manchaca Sur.	Location.
A. J. Swearingen's No. 7 Sandemer, 300 ft. S of No. 6, M. Manchaca Sur.	Location.

DARST CREEK FIELD—GUADALUPE COUNTY

Humble Oil's No. 21-A Denman, A. S. Emmett Sur.	T. D. 1,510 ft.; drlg.
Magnolia Petroleum Co.'s No. 6 Klein, 300 ft. S No. 3	T. D. 2,638 ft.; put on pump.
Magnolia Petroleum Co.'s No. 5 Knodle, 300 ft. S No. 3	T. D. 2,626 ft.; comp. for 500 bbls. pumping.
F. L. Thomson's No. 2 Posey, 25 ft. from NW line, 300 ft. from No. 1	Location.

CHAPMAN POOL—WILLIAMSON COUNTY

W. D. Anderson's No. 6-A T. P. Simmons	Rig up and shut down.
Anderson's No. 7 M. V. Lawrence, Simon Miller Sur.	T. D. 1,426 ft.; set csg.
W. D. Anderson's No. 8 M. V. Lawrence	Location.
Bartlett & Wilson's No. 2 R. E. Stewart	T. D. 790 ft.; standing.
Bartlett & Wilson's No. 1 R. E. Stewart	T. D. 741 ft.; standing.
Birdwell et al's No. 2 Simmons, Harrison Owen Sur.	T. D. 2,065 ft.; drlg.
Chapman et al's No. 1-D Abbott	Location.
Chapman et al's No. 2-D Abbott	Location.
Chapman et al's No. 5-D Abbott	T. D. 1,565 ft.; set csg.
Chapman et al's No. 7-D J. C. Abbott	T. D. 1,820 ft.; putting on pump.
Chapman et al's No. 2-E Sides	Location.
Chapman's No. 2-F Sides	T. D. 1,860 ft.; set csg.
Collins et al's No. 6 Lawrence	Location.
J. L. Collins & Co.'s No. 7 M. V. Lawrence, 150 ft. from E line, 215 ft. from S line of 27-ac. tract in the S. Miller Sur.	Setting csg.; shut down for water.
Ertell et al's No. 6 J. C. Abbott	T. D. 2,620 ft.; preparing to pump.
H. E. Ertell's No. 7 J. C. Abbott	T. D. 100 ft.; standing.
E. L. Chapman et al's No. 2-D Sides	T. D. 1,888 ft.; swabbing.
J. L. Collins & Co.'s No. 5 M. V. Lawrenve, 150 ft. from W line, 515 ft. from S line of 27-ac. tract, S. Miller Sur.	T. D. 1,402 ft.; standing.
Sequoia Oil Co.'s No. 7 T. P. Simmons	Location.
G. Stratton's No. 5 J. C. Abbott, 450 ft. from E line, 150 ft. from S line of 32-ac. tract, S. Miller Sur.	T. D. 1,730 ft.; set csg.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur.	T. D. 1,735 ft.; waiting on cement.

(Continued on Page 206)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
Cullen and Boren's No. 1 Medina Irrigation, W. Klemke Sur. No. 433	Location.

BLANCO COUNTY

H. L. Lewis' No. 1 Glasscock, moving in to drill on leases out of the Rodson block north of Blanco City	T. D. 500 ft.; shut down.
Hardy-Sitton's No. 1 McMillan	T. D. 700 ft.; shut down.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155	T. D. 890 ft; drlg.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City	T. D. 550 ft.; shut down.
J. R. Meek's No. 1 Walker, 360 rds. from W line, 482 rds. from S line of 375-ac. tract in Sur. No. 32	T. D. 1,000 ft.; drlg.
G. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,250 ft. to N line, Sur. No. 94	T. D. 600 ft.; drlg.

BASTROP COUNTY

Pacific Oil & Gas Co.'s No. 1 J. M. Litton, 150 ft. N and W lines of tract	T. D. 2,585 ft.; dry and abnd.
Majestic Pet. Co.'s No. 1 J. M. Breeding, 160 ft. from N line, 1,020 ft. from W line of 200-ac. tract, 940 varas from W line, 1,225 varas from S line of M. Andrews Sur., 13 miles W from Smithville	T. D. 375 ft.; standing.

BELL COUNTY

Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur.	Derrick
J. W. Riley et al's No. 1 J. W. Mosely, Maxiano Moreno Sur.	T. D. 1,930 ft.; shut down; hole full water.

BROOKS COUNTY

Ed East's No. 2 B. Garcia, 150 ft. from N and W lines of Blk. 5, Share A-1, Las Mastena y Gonzalene grant	T. D. 1,002 ft.; drlg.

BEE COUNTY

Hurlbut et al's No. 1 Mrs. D. Chestnut	T. D. 5,010 ft.; shut down.
E. S. Price's No. 1 Weiss, 200 ft. each way out of NW cor. of B.&B. Sur.	T. D. 4,423 ft.; preparing to swab.
E. S. Price's No. 2 Weiss, 900 ft. due SW of No. 1 Weiss, B.&B. Sur.	T. D. 4,546 ft.; testing.
E. S. Price's No. 3 Weiss, 900 ft. due NE of No. 1 Weiss.	Location.
Moody-Seagraves Producing Co. and Independent Oil & Gas Co.'s No. 1 Welder, 6,280 ft. from S line, 8,150 ft. from E line of Welder tract, Henry Eyles Sur.	T. D. 5,193 ft.; drlg.

(Continued on Page 174)

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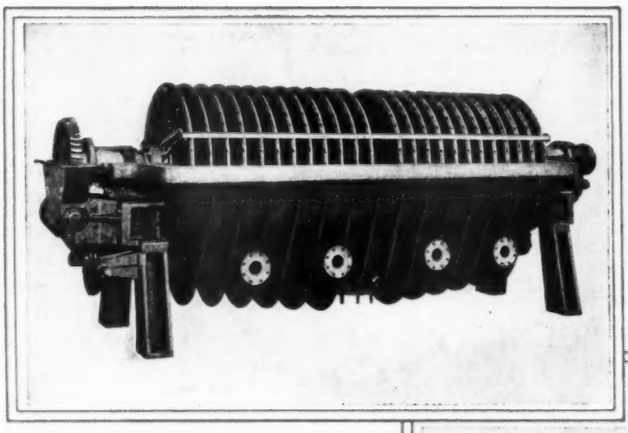

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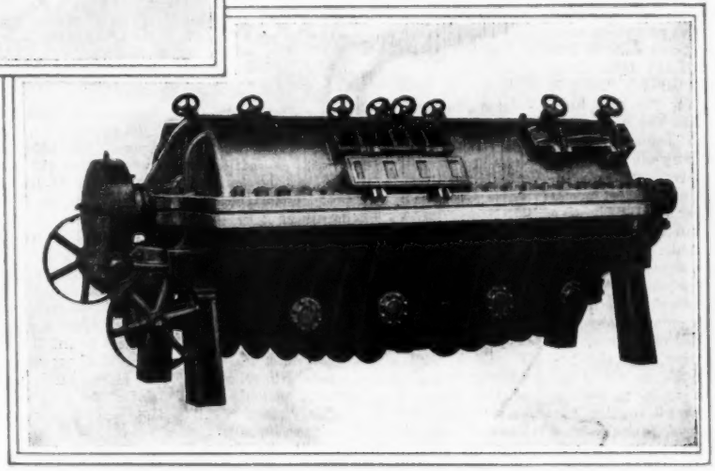

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Hobbs Pool Extended Mile Eastward

Completions in Eunice Pool Prove Disappointing. Shallow Test Planned in Niobrara County. Two Operations in Utah

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Jan. 26.—The productive area of the Hobbs Pool on the southeastern side was extended a mile to the east this week in the Midwest Refining Co.'s No. 29 Turner, in the Hobbs Townsite, which made 19,182 bbls. in 24 hours before it had fully cleaned itself of drilling water. Tidal Oil Co.'s No. 5 Grimes was given a potential of 8,813 bbls. Two small wells were completed by the Landreth Production Co. and the Midwest Refining Co. and the Cecil Bordages test south of the field is being abandoned. Drilling wells are now down to five. Wells being completed in the Eunice Pool are disappointing in results.

There were no completions in Colorado, though the Texas Production Co. is finishing up a good Sundance sand producer on the Moffat Dome.

Utah has only two operations reporting progress.

The government land leases on the Little Buffalo Basin structure in Wyoming brought an average of only $27.30 per acre, the Ohio Oil Co., the Custer Petroleum Co., the Midwest Refining Co. and T. A. Pedley being the successful bidders. The Geary Dome test is through the first Wall Creek and drilling toward the next objective and the Producers & Refiners Corp. is drilling ahead in its Big Sand Draw discovery in the Dakota. The Phillips Petroleum Co. will drill a shallow test in Niobrara County.

NEW MEXICO

Hoobs Pool—Lea County

The potential production of the Hobbs Pool as established by the executive committee for proration purposes for the last half of January is 1,081,411 bbls. daily from 137 wells on 122 units. This is practically the same as for the first half, it having been agreed that the old potentials would continue to January 15 to avoid opening the wells any more than is necessary. The figures represent an increase of three in the number of wells and two in the number of productive units of 40 acres each, but a reduction of a little more than 100 bbls. in the total for the field. This reduction is due to the practice of basing potentials on average unit production instead of the number of wells. One unit operated by the Tidal Oil Co. had three producers, including a recent completion, and the potentials of the wells on the unit are divided by the number of wells to obtain the average. The allowable outlet for the field for the last half of January was placed at 31,430 bbls. daily. Pipe line runs now are running close to the allowable outlet figures, the first half of January showing an allowable outlet of 472,125 bbls., against which 470,153 bbls. was run, there being a net shortage of 1,972 bbls. Most of this shortage is in the account of the Continental Oil Co. and arrangements were made to run this by the Humble Pipe Line Co. during the last half of the month. Total allowable outlet from July 10, 1930, to January 15 was 6,127,364 bbls. and of this amount 6,123,112 bbls. were run.

Opens New Territory

The Hobbs Pool registered a surprise in the Midwest Refining Co.'s No. 29 Turner, C SW SW, Section 34-18-38, which flowed 19,182 bbls. in 24 hours on a company test from a total depth of 4,175 feet. The hole had not been fully cleaned of drilling water and the well is expected to do better on the test for proration purposes after being cleaned and put in condition. This well is one of the most important completions in the pool for some time. It is in the Hobbs Townsite and is a mile due east of the Continental Oil Co.'s No. 1-B State, the nearest producer. It means not only the extension of the proven area a mile to the east in the southeastern part of the field, but the opening of some good drilling territory. It was expected that the well would come in as a producer, but the quantity of oil was a surprise. Midwest controls the 160 acres in the SW of Section 34, the quarter upon which the well is located, and all of the adjoining Section 3 on the south except the NE, which is held by the Continental Oil Co. Amerada Petroleum Corp. has the offset quarter on the east in the SE, Section 34, and Skelly, Shell and Landreth companies have tracts in the north half of Section 34. Midwest, Gypsy and Continental companies have the acreage between the new well and the producers to the west.

Tidal Oil Co.'s No. 5 Grimes, NW SE NE, Section 29-18-38, which last week was reported in the pay, was given a potential of 8,813 bbls. of oil and 7,000,000 feet of gas when gauged for proration purposes. The oil was at 4,110-4,200 feet and 3-inch was run to 4,182 feet. Elevation is 3,650 feet and top of brown lime 2,815 feet.

Landreth Production Co.'s No. 1-C State, NE cor. NW, Section 6-19-38, which extends the producing area half a mile west and the same distance south on the southwestern side of the pool, proved to be a small well and was rated at 388 bbls. of oil and 1,000,000 feet of gas at a total depth of 4,221 feet. The pay was at 4,080-4,221 feet and 3-inch is at 4,190 feet. Elevation is 3,642 feet and top of brown lime 2,927 feet.

Midwest Refining Co.'s No. 11 Thorpe, C NE NW, Section 10-19-38, an outside well on the southeastern side, half a mile southeast of the discovery well brought in by the Midwest in 1928, did a little better upon being deepened to 4,200 feet, at which depth it was flowing by heads. After being completed and gauged it was given a rating of 378 bbls. It is 1¼ miles south and a little east of the company's big producer in the Hobbs Townsite, and the company controls all the acreage between the two producers.

Cecil Bordages' No. 1 Hughes, C S half, Section 27-19-38, 2 miles south of the nearest producer in the Hobbs Pool, is pulling pipe to abandon after the rig caved in. It was bottomed at 4,012 feet and has had all the troubles listed in the catalog. It started drilling in August, 1927, before Midwest began operations on the wildcat which brought in the Hobbs discovery. Spreads around the well were owned by Midwest, Amerada, Ohio, Gypsy and other companies. Elevation is 3,585 feet. It cut the salt at 1,680-2,735 feet. It had a show of light oil and gas at 3,060-70 feet and 2,000,000 feet of gas at 3,120 feet. It topped the lime at 3,750 feet.

Drilling Operations

There were no new locations in the Hobbs Pool and the number of drilling wells is now down to five. These include the following:

Midwest Refining Co.'s No. 11 State, C NE SW, Section 5-19-38, is drilling at 3,980 feet, and its No. 11 State, C NE NW, Section 9-19-38, is drilling at 4,15[illegible] feet in lime. Same company's No. [illegible] Terry, C NW NW, Section 9-19-38, is drilling at 3,000 feet in lime and anhydrite.

Amerada Petroleum Corp.'s No. 1-C State, NE cor., Section 36-18-37, is drilling at 3,452 feet. It topped brown lime at 2,885 feet and had first gas at 2,910 feet. Elevation is 3,655 feet.

National Securities Oil Co.'s No. 1 Linam, NE SE SW, Section 33-18-37, 4 miles west of the nearest producer, is bottomed at 3,860 feet and is rigging up rotary in an effort to drill by the tools. At this depth it had 4,000,000 feet of gas.

Eunice Area—Lea County

Some of the wells in the Eunice area which looked discouraging last week showed up a little better this week. Continental Oil Co.'s No. 2 A. E. Meyers, SE cor. NW, Section 17-21-36, an offset on the west to Tidal Oil Co.'s No. 1 Coleman, which was bailed dry at 3,900 feet, was deepened to 3,992 feet and is preparing to swab. It is flowing by heads at intervals of five to six hours and making 25 bbls. at each head. Shell Petroleum Corp.'s No. 1 Coleman, NW cor. SE, Section 17-21-36, an offset on the south to the Tidal's producer, is bottomed at 4,005 feet and after being shot and cleaned out is flowing an average of 5 bbls. per hour by using bradenhead gas. The pay was at 3,850-4,005 feet. Atlantic Oil Producing Co.'s No. 1 Coleman, SW NE NW, Section 17-21-36, one-third of a mile to the northwest of the wells just mentioned, is drilling at 3,675 feet. It had a gas blowout at 3,534 feet, the flow being estimated at 50,000,000 feet. Continental Oil Co.'s No. 1-A Lockhart, NE cor., Section 18-21-36, is drilling at 3,754 feet. California Co.'s No. 1 Meredith, SE cor. NE, Section 19-21-36, spudded on January 1[illegible] and is drilling at 206 feet in sand.

Caprock Area—Lea County

Western Drilling & Engineering Co.'s No. 1 Bridges, SE cor. NW, Section 17-17-34, is drilling at 4,505 feet.

Eddy County

Flynn, Welch & Yates' No. 59 State, NW cor., Section 5-19-28, Artesia district, is drilling at 300 feet in the red beds. This is the only active operation in the Artesia Field.

Harding County

Milwaukee Syndicate's No. 1 Kerlin, NW cor. SE, Section 34-21-30, Bueyeros district, 20 miles southeast of Mosquero, is ready to spud. The syndicate has 20,000 acres blocked up.

Rio Arriba County

L. E. Elliott's No. 1 Elliott, NW cor. NE, Section 26-21-9e, Santa Cruz district, has resumed and is underreaming 6⅝-inch at 1,610 feet.

San Juan County

Continental Oil Co.'s No. 24, SW cor. NW, Section 1-29-19, Rattlesnake, is drilling at 4,675 feet.

San Miguel County

A. E. Kull and others' No. 1 Cherryvale, NE, Section 34-17n-21, in the Cherryvale district, is rigged and ready to spud. The surface is the Jurassic. Herald field Development Co.'s No. 1 Cabot Springs Ranch, NE, Section 21-12-22, is shut down at 1,542 feet. Star Oil Co., Ltd.'s No. 3 Adams, NE cor., Section 25-17-17, is bottomed at 3,355 feet and is reaming 6⅝-inch to bottom.

Valencia County

Acme Development Co.'s No. 1 Sant[illegible]

DEEPEST TEST IN TURNER VALLEY MAKING 16 BBLS. AT 6,194 FEET

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Jan. 24.—In Central Turner Valley, Sioux City Oils' No. 1, LSD 10, Section 1-20-3w5, is officially reported to be making 16 bbls. with the test bottoming at 6,194 feet. At this depth it is the deepest test, geologically, in the Turner Valley Field, being 1,809 feet in the lime, though in footage it falls short of British Dominion's No. 1, which was abandoned at 6,600 feet without reaching the lime. Shareholders of the Sioux City company held their annual meeting at Calgary last week, when it was decided to take production from the present horizon till April, when the test may be deepened another 600 feet in the lime. If this deeper drilling fails to materially increase the wet gas flow, a shot will likely be tried. The actual cost of drilling No. 1 deep test was $63,332.19. Officers re-elected were: President, W. E. McLeod; secretary, Hugh Walsh; director, E. C. Walsh. Sioux City's No. 1 is in the heart of the central field and a little south and west of McLeod Oil Co.'s No. 4, which last summer encountered a lower pay at about 1,400 feet in the lime. The Sioux City test is reported in good shape for deeper drilling.

In the same section, McLeod Oil Co.'s No. 5, LSD 15, is cleaning out and testing, with initial crude naphtha recovery around 60 bbls.

In Section 12-20-3w5, Illinois-Alberta Oils' No. 1, LSD 14, is reported to have cleared the hole of drill rods and is fishing for lost diamond bit. The hole bottoms at 3,857 feet and considerable gas is blowing, indicating it is coming back into production. For some years it made around 100 bbls. a day from the lime.

Structure Oil & Gas Co.'s No. 1, LSD 7, Section 31-19-2w5, is drilling 345 feet in the lime at 5,058 feet with some gas production.

Dome Oils' No. 2, LSD 16, Section 36-19-3w5, south of the Okalta wells and a little west of Royalite's No. 23 producer, is drilling below 4,800 feet. This well is testing a new area and is reported logging closely with Okalta's No. 1, which got a big initial production in the lime. A good show of light crude was met in the Home sands and there is a possibility of further crude in the Dalhousie before the lime is reached.

Spooner Oils' No. 4, LSD 14, Section 13-20-3w5, was shot at 5,449 feet, following unsuccessful attempts to fish the lost tools. At this depth the test is 379 feet in the lime.

In North Turner Valley, United Oils' No. 4, LSD 2, Section 24-20-3w5, is reported working on new derrick, to resume at 4,900 feet. The recent fire did no damage to the hole cased to around 4,810 feet.

Among the Imperial Oil tests, Royalite Oil Co.'s No. 24, LSD 3, Section 29-19-2w5, in South Turner Valley, is unofficially reported testing production at 5,552 feet, 297 feet in the lime. The well had about 9,000,000 feet of wet gas at this depth and may be a small commercial producer.

South Turner Valley

In South Turner Valley, an important new wildcat is planned for the eastern end of the structure. C. L. Atkins and associates have subleased acreage in LSD 14, Section 16-19-2w5, owned jointly by

(Continued on Page 180)

The big red Halliburton trucks that you see in the field do their work amazingly well; but they are merely the visible symbols of the intense research and scientific study that goes on constantly in the Halliburton laboratories . . . To meet Halliburton standards the strongest commercial trucks are rebuilt to make them *stronger;* the most dependable pumps are strengthened to make them *more dependable;* valves, fittings, plugs and mixing device are all specially designed to give your well the maximum protection to which its liquid treasure entitles it.

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Fe, SW NW, Section 27-7n-4w, is bottomed at 5,065 feet and has underreamed to 4,916 feet. The 5 3/16-inch is at 4,500 feet.

COLORADO

The annual stockholders' meeting of the Platte Valley Petroleum Co., the drillers of the discovery well on the Greasewood Dome in Weld County, Colorado, has been in session at Fort Morgan.

The discovery well, which is averaging around 350 bbls. daily, natural flow, has attracted wide attention. At first leasing and geological work were confined mostly to the area in Weld and Morgan Counties directly affected by the discovery and to local highs on what is known as the Fort Morgan anticline. However, there is growing belief that the big Julesburg Basin offers opportunities which have not previously been fully recognized and the investigations are extending outward over a large territory. Operators conversant with the more recent investigations declare that in their opinion this territory, embracing many thousands of square miles, will within the next two or three years develop into one of the major wildcat plays of the country. Some of the oil companies, apparently convinced of the possibilities, are making thorough surveys of the entire region and are taking their time in this work in order to get a broader view of the area as a whole.

Morgan County

Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, was reported drilling at 3,915 feet on January 17. It was held up for some time at 3,905 feet on account of casing trouble, which, apparently, has been overcome and new hole is being made.

Washington County

Fred R. Zimmerman and others' No. 1 Middlemist, SE SW SE, Section 14-4s-56, formerly Middlemist Oil Co., is temporarily shut down at 1,510 feet on account of bad road conditions.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, Aurora district, is bottomed at 5,730 feet and rigging up to cement. The 6¼-inch is at 5,690 feet and is leaking a little water. This string underwent severe swedging in order to straighten out some kinks that developed when it dropped several months ago.

Larimer County

Continental Oil Co.'s No. 3 Scott, SW SE, Section 6-9n-68, Wellington Dome, an old producer being deepened to test the Sundance, is standing cemented at 4,932 feet in gray sand, supposed to be the base of the Morrison. Standard Oil Co. of Colorado's No. 1 Hertha, NW cor., Section 21-4n-69, Berthoud Dome, is bottomed at 3,540 feet and is cleaning out cavings and underreaming 6¼-inch at 3,530 feet.

Baca County

A. R. Jones Oil & Operating Co.'s No. 1 Boice Cattle, Tract 50-34-42, Miles Camp structure, is drilling below 4,400 feet in blue shale.

Pueblo County

Kuykendall Oil Corp.'s No. 1 Beecher, SW cor., Section 7-22s-66, Rock Creek district, was drilled to 1,312 feet under new contract, but did not pick up the Sundance sand. It may be drilled deeper. Upper sands showed some rainbows.

Fremont County

Isador Spangler's No. 1, SE SE, Section 4-20-69, South Florence, is drilling at 1,880 feet.

Moffat County

The Texas Producing Co.'s No. 4 Wick, NW NW, Section 10-4n-91, Moffat Dome, was deepened 5 feet to 4,759 feet, 7 feet into the Sundance, and flowed 258 bbls. in 24 hours. It is preparing to run pipe. Mountain States Fuel Co.'s No. 2 State, Tract 37-12n-100, Hiawatha Dome, is drilling at 1,575 feet.

Arapahoe County

Land Trust Syndicate is blocking up leases in the Byers district and expects to start a Dakota test as soon as 8,000 to 9,000 acres are secured. The geology is being done by Capt. J. D. Skaggs. It is expected that 10 sections of Union Pacific Railroad land will be included in the block. The objective is logged at 4,000 to 4,500 feet.

UTAH

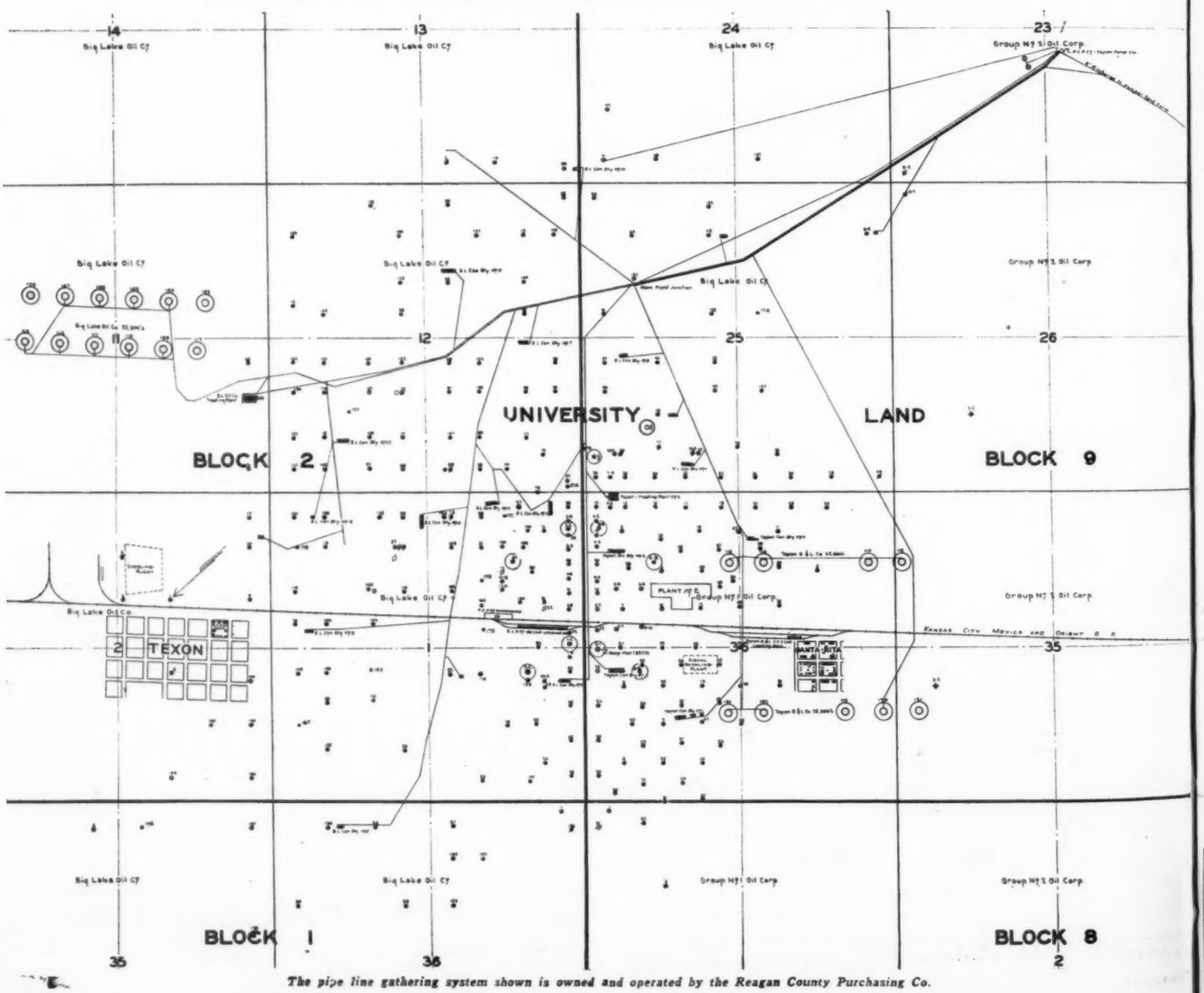
Utah Southern Oil Co.'s No. 1 Balsey, C NE NE, Section 31-23-21, Salt Valley Structure in Grand County, is drilling at 865 feet in shale and gypsum. The 15½-inch was cemented at 76 feet. This te... is expected to go through the lower Pen... sylvanian and will be drilled to 3,5... feet. It is a joint operation with Moun... tain States Petroleum Corp. Diamon... Oil Co.'s No. 1, SE NW, Section 1... 8s-5e, Utah County, is drilling at 3,0... feet in lime.

WYOMING

The 2,453.43 acres of government la... on the Little Buffalo Basin structure a... the Big Horn and Hot Springs Counti... offered for lease at public auction by th... Department of the Interior at Cheyen... on January 16 brought bonuses aggr... gating $66,946, or an average of $27.... per acre. The land, which was offer... in four units, lies around the outside o... the structure, though most of it is with... the closing contour and is farther dow... on the flanks than the holdings of th... Midwest Refining Co. and the Ohio O... Co. which have controlled most of th... acreage for a number of years. Greb... Royalties, Inc., which owns one permi... and a state lease, was the only other op... erator up to the time of the sale. There... has been some criticism of the Interio... Department in offering the leases at thi... time, but this came mostly from New... York papers. One of these was quoted a... saying the leases were worth $1,000 a... acre, to which an assistant secretary o... the department was quoted as replying... that they were not worth more than $...

(Continued on Page 165)

MAP OF BIG LAKE FIELD, REAGAN COUNTY, TEXAS



The pipe line gathering system shown is owned and operated by the Reagan County Purchasing Co.

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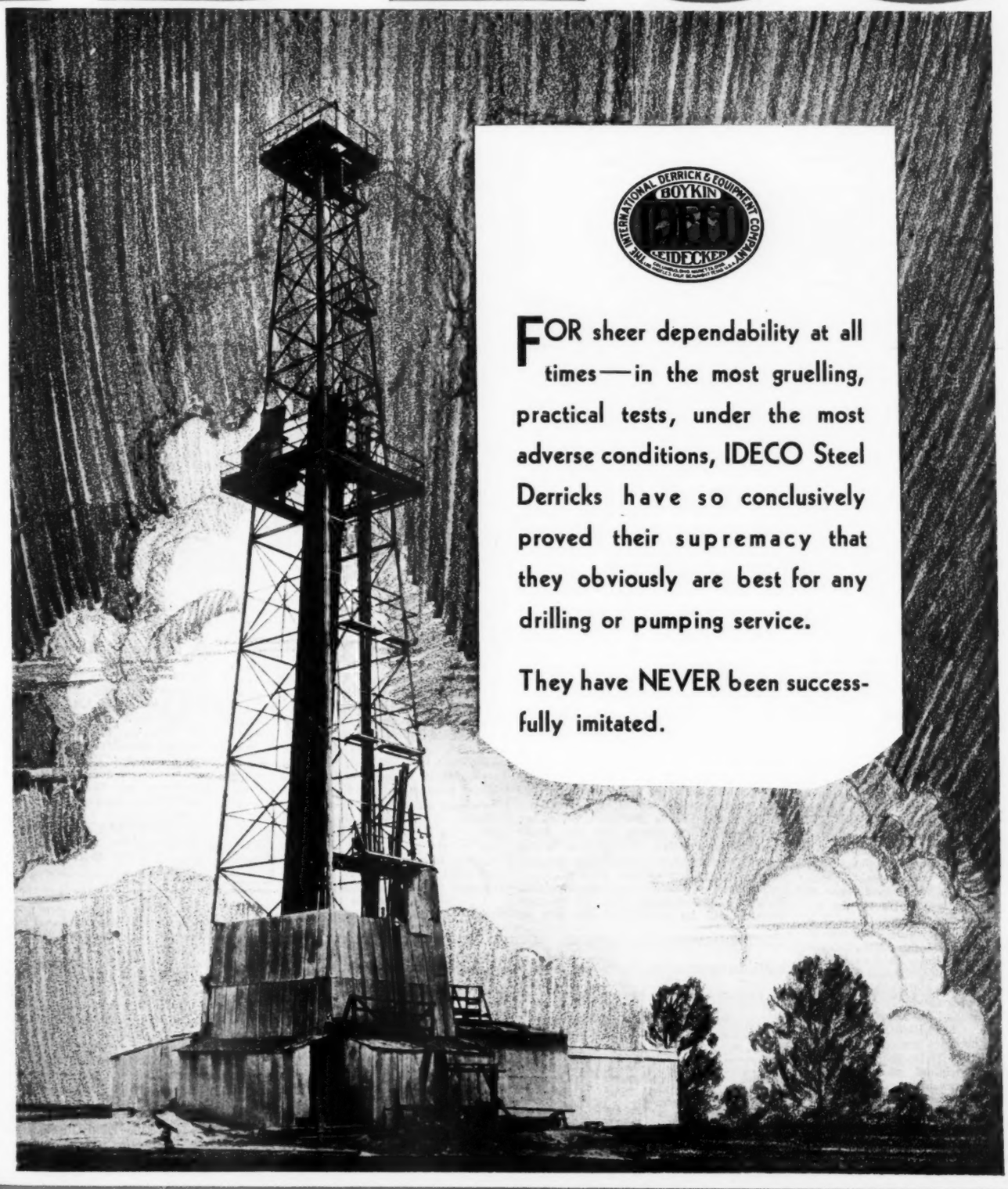

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Progress in Playa Del Rey Curtailment

Richfield Receiver Proposes Co-operative Plan for Refining and Distribution After Cancellation of Crude Contracts

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Jan. 24.—There was no great change in the status of curtailment work in California during the week, although some additional progress was made in the attempt to secure universal adoption of curtailment work in the Playa Del Rey Field of Los Angeles Basin. Major companies are affording an outlet for all producers conforming with the curtailment program and, while progress along this line has been rather slow, the delay encountered has been due to the absence of extensive pipe line facilities. Late in the week arrangements were completed for the utilization of the Del Rey Oil & Refining Co.'s pipe line facilities whereby this company will be paid 5 cents per barrel for all crude transported via its system. The Union Oil Co. has also posted notice of a field gathering charge of 5 cents per barrel for receiving and delivering such oil into its Del Rey pipe line system. Heretofore the Union Oil Co.'s gaugers have been working gratuitously gauging oil for other buyers in order to promote effective enforcement of curtailment.

True to expectations, William C. McDuffie, federal receiver in equity for the Richfield Oil Co. of California, served notice to producers of crude oil from which it has been buying that all existing crude oil purchase contracts were null and void. This notification cancelled crude oil purchases approximating 20,000 bbls. per day exclusive of the Pacific Western Oil Co.'s current daily production on which the Richfield has first call for the next 8 years. Receiver McDuffie cancelled crude oil purchase contracts effective at midnight January 21, but at the same time notified producers that the Richfield Oil Co. would continue accepting current production for a period of one week, during which time the oil would be stored free of cost while producers lined up additional buyers.

Co-operative Plan

In exercising the prerogative accorded a receiver in equity, Mr. McDuffie cancelled a number of crude oil purchase contracts which commanded bonuses from 5 to 14 cents per barrel above the general prevailing posted price. Cancellation of these bonus contracts affected approximately 23,000 bbls. of crude, a large part of which was in the Long Beach Field. Simultaneously with the cancellation of all crude oil purchase contracts, the receiver announced the inauguration of a new policy consisting of a co-operative plan for the refining and selling of petroleum products. Under this new plan, producers of crude oil will pool their oil with production of the Richfield Oil Co. and share proportionately in the actual cost of refining and distribution of refined products. The Richfield Oil Co. will receive a nominal commission, after which all profits will be shared in proportion to the original pool interests. Mr. McDuffie, as president of the Pacific Western Oil Co. and receiver of the Richfield Oil Co., announced that the former had already assented to the co-operative plan of the latter.

It is assumed that most of the producers who have been selling crude oil to the Richfield Oil Co. will approve of the new co-operative plan of refining and distribution of petroleum products for the simple reason that they would be unable to induce other major companies to purchase their current production. The reception accorded the Richfield Oil Co.'s new co-operative plan will have a very decided effect on California's crude oil curtailment program, because if producers fail to ratify this co-operative movement and decide to take a chance on disposing of current production to independent refiners, both crude and refined oil prices will be adversely affected. The extent to which the general price structure will be affected is problematical but this condition is receiving the minute consideration of major companies, some of whom view the immediate future with anxiety.

Playa Del Rey

After a virtual dormancy of several weeks, the Playa Del Rey Field came to life this week and yielded several exceptionally good producers. The most important completion chalked up was the Herndon Petroleum Co.'s No. 1 Del Rey, which came in under a natural flow doing 1,670 bbls. of exceptionally clean 24.5 gravity oil and 1,700,000 feet of natural gas per day. This new well, which extended the outer limits of the Playa Del Rey Field approximately 1,000 feet southeasterly, was bottomed at 6,167 feet and finished with a 7-inch water string landed at 5,925 feet and a 4¾-inch liner including 244 feet of perforated. It is flowing through a three-fourths inch bean under a pressure of 990 pounds. A. T. Jergins finished two wells in the Playa Del Rey Field during the week, both of which registered substantial production. On the Troxel lease, Jergins completed No. 1 flowing 1,960 bbls. of 24.4 gravity oil and 1,100,000 feet of natural gas per day from 5,859 feet. On the Langley lease, the A. T. Jergins Trust finished No. 1 flowing 960 bbls. of clean 25.2 gravity oil per day. This new well was bottomed at 5,844 feet and finished with a 6⅝-inch water string landed and cemented at 5,495 feet and a 5-inch liner carrying 380 feet of perforated.

Knox, Powell Stockton Co.'s No. 4 Davis was somewhat of a disappointment upon completion in the deep Recreation zone at 6,354 feet as it was good for only 305 bbls. initially, the oil testing 23.8 degrees and showing a cut of 2 per cent. Silver Strand Oil Co.'s No. 1 Del Rey, finished in the shallow Del Rey zone at 4,713 feet with a 6⅝-inch liner carrying 1,180 feet of perforated, was good for only 125 bbls. on the beam. This well was still cutting in excess of pipe line requirements up to a late hour but may possibly clean up after it has been on production for a few days. Drilling operations in the Playa Del Rey Field have shown a substantial decline during several weeks and will continue to become of less importance as time goes on.

Corporation Commissioner Raymond L. Haight has announced that no further permits will be issued for the sale of stock in any well located in the northern or western end of the Playa Del Rey Field. He also announced that two companies which had applied for permits to sell interests in wells to be drilled in that particular area had been denied. He also intimated that permits heretofore issued for the financing of wells in the western section will be suspended to prevent further sales of stock or other securities. The action of the corporation commissioner was the culmination of an investigation started several weeks ago following reports to the department that portions of the Playa Del Rey Field were producing oil in such small quantities that investors could not hope for any fair return on their investment. This inquiry involved a close study of 36 wells and 23 additional projects which were abandoned or suspended because of the inability to produce clean oil. It has been evident to those familiar with production activities that very few operators in the Playa Del Rey Field would be successful in producing a sufficient quantity of oil to pay even a substantial part of the original capital investment. Attention was directed to this condition in The Oil and Gas Journal shortly after discovery of the field by the Ohio Oil Co. on the assumption that the limited amount of oil sand present precluded the production of a sufficient amount of oil to justify intensive development. Some operators at Playa Del Rey will recover their capital investment and make a satisfactory profit. In this group is included the Ohio Oil Co., Union, Barnsdall, A. T. Jergins and several others.

Long Beach

Completions in the Long Beach Field during the week were not especially conspicuous. The best well finished was the Republic Petroleum Co.'s No. 1 Signal, recompleted flowing 1,050 bbls. upon being redrilled and cleaned out to bottom. Carson Oil Co.'s No. 10 Long Beach was brought in flowing 475 bbls. on a compressor after being plugged back from 5,020 feet to 3,100 feet. Cummings Petroleum Co. recompleted its No. 1 Signal flowing 295 bbls. of clean 29.2 gravity oil after redrilling and deepening it from 7,305 feet to 7,526 feet. This well would undoubtedly have registered a much larger production if a fishing job had not developed at the last moment leaving 10 stands of drill pipe in the hole. The M. B. & H. Oil Co.'s No. 1 Signal was put on the beam a few days ago following the failure to secure a natural flow at 6,321 feet and this new well was brought in pumping 240 bbls.

Kettleman Hills

The Petroleum Securities is expected to finish No. 2 Felix, a new well in the Kettleman Hills Field of Kings County within a day or two. This well was originally scheduled for completion January 22, but mechanical trouble developed at the last moment and completion is dependent upon the rapidity with which recovery is effected. No. 2 Felix was carried to 8,100 feet, at which depth it was decided to land a 6⅝-inch combination string. Unluckily, the oil string from approximately 500 feet off bottom and could not be loosened due to the drilling hazard. The combination oil string included 500 feet of perforated although over 1,500 feet of oil bearing formation had been cored. The upper 1,000 feet of oil sand was scheduled to be blanked off in an effort to develop substantial production of heavy oil in preference to the 60 gravity crude secured from the upper horizon or high pressure gas zone. In other words, the Petroleum Securities made preparations to complete a well similar to the Superior Oil Co.'s No. 1 Huffman, which is producing 11,410 bbls. of exceptionally clean 37.6 gravity oil. The Petroleum Securities is bailing No. 2 Felix and will attempt to finish it in its present imperfect mechanical condition if possible.

Operators in the Kettleman Hills Field participated in a pool aggregating $104,922, which represents the so-called drainage factor for that field. This sum was divided up among 25 wells participating in the Kettleman Hills curtailment agreement which contemplates a reduction in drilling and production activities until next July. The average distribution per well was $4,197 in December, compared with $4,300 in November and $4,500 in October. This decline in the average well distribution is due to a drop in production during the period. The amount distributed to the 25 wells participating in the pool for December represents 25 per cent of the value of oil produced by the Standard, Milham and Continental Oil Companies during the period. This trio produced 254,356 bbls. of crude oil with a gross value of $419,687, of which 25 per cent, or $104,922, constituted the drainage distribution. The Pacific Western, Associated, Bolsa Chica, Continental and Shell each received one unit, General Petroleum and Getty Oil Co. two units and Milham Exploration Co. three. The Standard Oil Co.'s share of the distribution was $54,560, represented by 13 participating wells.

Belridge

Drilling operations during the week revealed the probability that the North Belridge Field of Kern County will be considerably smaller in areal extent than generally believed. The Richfield Oil Co. concluded drilling operations in its No. 1 Belridge in Section 22-27-20 at 6,639 feet and has plugged back to 6,400 feet because of a gray sand logged in the bottom of the hole. A string of 6⅝-inch was landed and cemented at 6,255 feet and an early test will be concluded. The Standard has suspended drilling operations in No. 1 McPhail at 4,528 feet pending the outcome on other wells under way. The Belridge Oil Co. is running four strings of tools in this field but is not expected to increase the present scope of work. The Ohio Oil Co.'s No. 1 Bloemer in Section 36-27-20 is correlating considerably deeper structurally than the Belridge Oil Co.'s discovery well, indicating a very pronounced unconformity in subsurface conditions. The unfavorable condition was responsible for the suspension of drilling by the Standard in No. 1 McPhail. The Texas Company is still making hole in No. 1 Martin in Section 22-27-20 and will probably carry this hole down for a conclusive test despite its present unfavorable outlook due

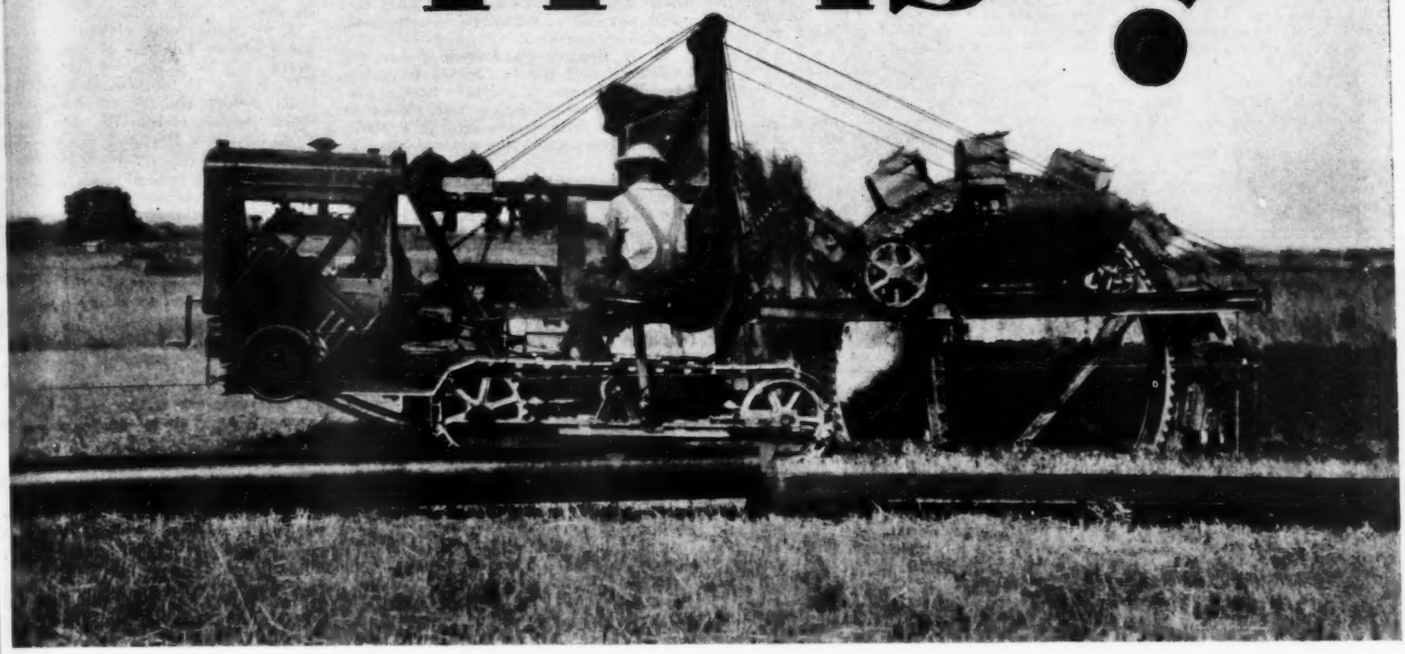
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	119,644	17,092	88,816	12,688	208,460	286,791
Gasoline	329,744	47,106	483,290	69,041	813,034	1,509,404
Coastwise—						
Crude oil	524,671	74,953	363,496	51,928	888,167	798,022
Fuel oil	270,836	38,691	495,877	70,840	766,713	994,058
Diesel and gas oil	40,941	5,849	40,377	5,768	81,318	78,228
Gasoline	319,798	45,685	175,477	25,068	495,275	757,980
Kerosene	7,955	1,136	18,774	2,682	26,729	2,669
Exports—						
Crude oil	224,615	32,088	126,774	18,111	351,389	534,679
Fuel oil	254,984	36,426	212,398	30,343	467,382	872,342
Diesel and gas oil	120,004	17,143	5,975	854	125,979	165,954
Gasoline	250,657	35,808	632,142	90,306	882,799	792,228
Kerosene	.....	.....	3,022	432	3,022	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Coastwise—						
Fuel oil	141,000	20,143	83,629	11,947	224,629	88,786
Diesel and gas oil	.....	.....	.....	.....	.....	17,116
Gasoline	94,707	13,530	34,232	4,890	128,939	214,257
Kerosene	7,761	1,109	.....	.....	7,761	7,611
Exports—						
Crude oil	.....	.....	.....	.....	.....	3,075
Fuel oil	.....	.....	.....	.....	.....	454,093
Diesel and gas oil	.....	.....	.....	.....	.....	6,050
Gasoline	.....	.....	82,176	11,739	82,176	264,426
Kerosene	.....	.....	.....	.....	.....	37,672

YES SIR IT IS !



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The CLEVELAND BABY DIGGER

to the Richfield Oil Co.'s deep test to the north.

The Universal Consolidated, a subsidiary of the Richfield, has landed a string of 6⅝-inch in its Lost Hills project following five unsuccessful cement jobs on the 9⅝-inch water string landed at 4,872 feet. The Union Oil Co. spudded in No. 1 Bacon, a wildcat west of the North Belridge Field of Kern County, and good footage is being made notwithstanding the hole is being cored solidly from the grass roots down. This wildcat is being drilled on a separate structure between the North and South Belridge Fields in Section 21-28-20. The Standard drilled a wildcat in this area several years ago but failed to develop commercial production and ceased operations. Drilling operations in the Lost Hills-Belridge Fields of Kern County have shown a consistent increase during several weeks, although a large part of the new work undertaken is in the North Belridge Field where operators recently agreed to limit completions to not more than one well for each operator.

Huntington Beach

The Superior Oil Co. has cleaned out No. 1 Fee, its deep test in the Huntington Beach town lot section and preparations are being made to core ahead below 7,438 feet, at which point drilling operations were temporarily suspended about two months ago following the company's inability to develop commercial production. In addition, the Superior is redrilling No. 7 Gillette at 3,480 feet preparatory to a resumption of drilling at 4,161 feet. The Transport Oil Co. landed a string of 4½-inch at 6,950 feet preparatory to making an early production test in No. 17 McCaslin, bottomed at 7,112 feet. The Standard Oil Co. staked location for four new wells in the West Coyote Field of Los Angeles Basin and the first of this quartet will probably be well under way within 30 days. This new work is more or less exploratory. Two wells will be drilled on the Emery lease and two more on the Murphy Coyote lease. In the Seal Beach Field the Standard recompleted No. 5 San Gabriel flowing 960 bbls. of 22.9 gravity oil per day after plugging back the hole to 4,595 feet. Continental Oil Co.'s No. 24 Selover has resolved itself into a real deep test for the Seal Beach Field as the bit in this hole was rotating a few days ago at 8,250 feet.

The Palisades Petroleum Co. completed

(Continued on Page 181)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status—
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	6,819	to abandon
Fields Gas Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	5,570	suspended
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-33	5,250	br. sh. drilling
Barnsdall, No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	6,050	cleaning out
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	1,800	cemented
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	4,180	cemented
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	1,485	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	1,016	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	1,026	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	1,035	suspended
General Pet., No. 143 Goleta, Santa Barbara Co.	21- 4-28	1,040	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	cleaning out
Caldwell Brown, No. 159 Goleta, Santa Barbara Co.	24- 4-29	1,040	suspended
Cochran, J. H., No. 1 Naples, Santa Barbara Co.	7- 4-29	4,780	suspended
Johnson, George, No. 1 Goleta, Santa Barbara Co.	X- 4-28	4,089	suspended
Prairie Oil Co., No. 1 Capitan, Santa Barbara Co.	32- 5-30	1,956	sd. sh. drilling
Cuyama Oil Corp., No. 1 Cuyama, Santa Barbara Co.	12-10-27	rig	suspended
Hart Pet. Co., No. 1 Cuyama, Santa Barbara Co.	27-10-26	....	material
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	5,500	suspended
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Prairie Oil & Gas Co., No. 1 Ventura, Ventura Co.	30- 3-22	8,290	br. sh. drilling
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. C. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	7,890	br. sh. drilling
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	mtl.	foundation
Associated, No. 1 Fillmore, Ventura Co.	16- 4-20	....	location
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	5,370	sd. sh. drilling
Lockwood Valley Oil Co., Well No. 1, Ventura Co.	32- 8-21	675	suspended
Nordon Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	6,590	cleaning out
Superior Oil Co., No. 1 Buttonwillow, Kern Co.	32-29-25	4,802	abandoned
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,230	cleaning out
General Pet., No. 1 Belridge, Kern Co.	30-28-21	3,640	redrilling
The Texas Company, No. 1 Belridge, Kern Co.	22-27-20	3,875	sd. sh. drilling
Richfield, No. 1 Belridge, Kern Co.	20-27-20	6,639	set pipe
Standard, No. 1 Belridge, Kern Co.	31-27-20	4,600	sd. sh. drilling
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,075	br. sh. drilling
Reward Oil Co., No. 1 Belridge, Kern Co.	34-27-20	3,114	sd. sh. drilling
Union, No. 1 Bacon-Belridge, Kern Co.	21-28-20	175	sd. drilling
Union, No. 17 Belridge, Kern Co.	36-27-20	4,400	br. sh. drilling
Casa Mira Oil Co., No. 1 Belridge, Kern Co.	29-28-20	....	location
Tom Cannon, No. 1 Belridge, Kern Co.	18-28-22	mtl.	building rig
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,094	sd. sh. drilling
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	....	material
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	6,875	hd. sd. drilling
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	5,175	sd. sh. drilling
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	1,000	sd. sh. drilling
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	5,966	cemented
Standard, No. 1 Devils Den, Kern Co.	14-25-18	1,574	redrilling
Wellport Oil Co., No. 1 Devils Den, Kings Co.	9-24-17	3,940	suspended
Shell, No. 1 Semitropic, Kern Co.	17-27-23	9,195	hd. sd. drilling
Cities Service, No. 1 Wasco, Kern Co.	16-28-24	1,880	core hole
C. C. M. O. Co., No. 1 Jasmine, Kern Co.	31-28-25	141	sd. drilling
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Meridian Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	3,804	to abandon
Ritchie, J. J. No. 1 Tejon, Kern Co.	33-11-19	5,530	suspended
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	3,714	sd. sh. drilling
Carruthers Oil Co., No. 1 Fresno, Fresno Co.	4-17-20	rig	suspended
Miracle Oil Co., No. 1 Cuyama, San Luis Obispo Co.	17-10-25	314	suspended
Panorama Oil Co., Well No. 1 San Luis Obispo Co.	7-31-21	4,019	suspended
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,525	recemented
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	21-27-21	3,941	suspended
Continental, No. 1 San Miguel, San Luis Obispo Co.	26-25-11	3,500	hd. sd. drilling
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	916	suspended
Pismo Dome Oil Co., No. 1 Edna, San Luis Obispo Co.	5-31-13	3,010	cleaning out
Schockley, C., No. 1 Pismo, San Luis Obispo Co.	13-32-13	2,530	suspended
Pacific Inland, Well No. 1, Monterey Co.	19-23-15	1,044	hd. sd. drilling
Brown, F. A., No. 1 Parkfield, Monterey Co.	15-23-14	816	suspended
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Murphy Oil Co., No. 1 Dudley Ridge, Kings Co.	20-23-20	3,170	sd. sh. drilling
Kettleman Dev. Co., No. 1 Tulare Lake, Kings Co.	32-22-19	....	location
Kettleman Lakeview, No. 1 Tulare Lake, Kings Co.	11-23-19	1,304	gas well—idle
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	2,177	sd. sh. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	19-23-16	1,148	suspended
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	5,630	sd. sh. drilling
Orinda Pet., Well No. 1 Contra Costa Co.	32- 1- 3	1,370	hd. sd. drilling
White Roy, No. 1 Pixley, Tulare Co.	8-23-26	4,495	suspended
Kettleman Trust, No. 1 Porterville, Tulare Co.	21-22-27	940	suspended
Enterprise Oil Co., No. 1 Porterville, Tulare Co.	29-23-28	820	suspended
Grand View Oil Co., No. 1 Porterville, Tulare Co.	8-23-28	992	suspended
McCoy, W. D., No. 1 Porterville, Tulare Co.	35-21-27	1,040	abandoned
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,060	redrilling
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	811	hd. sd. drilling
Getty Oil Co., No. 1 Nigger Heaven, Yolo Co.	23-12- 3	2,050	suspended
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,100	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,345	cemented

TWO COMPLETIONS IN MICHIGAN ADD 350 BARRELS INITIAL OUTPUT

By Paul A. Elliott

MUSKEGON, Mich., Jan. 24.—Two new wells, one in the original Mount Pleasant Field and the other in the Leaton Pool, added about 350 bbls. of initial production to the Mount Pleasant area this week. The well in the proved Mount Pleasant Field was the largest recent completion in Michigan. This well is the Pure Oil Co.'s No. 2 George L. Burrows, NE SE, Section 3-14n-3w, Chippewa Township, Isabella County, and it made 325 bbls. initial in the Dundee. Limestone was topped at 3,515 feet with pay sands at 3,552-90 feet, the total depth.

A. R. Beadle's No. 1 Ezra Grover, SE SE, Section 19-15n-3w, Denver Township, Isabella County, is the new Leaton producer. Dunee limestone was topped at 3,621 feet with pay sands at 3,664-70 feet at which depth the well swabbed 30 bbls.

Dundee limestone was topped at 3,610 feet with pay sands at 3,648-66 feet in the Ohio Producing & Refining Co.'s No. 4 Epple, N half SE SW, Section 19-15n-3w, also Denver Township, Isabella County, completed last week as a 200-bbl. initial producer.

Interest was centered in two wells in semiwildcat areas near Mount Pleasant, the Pure Oil Co.'s No. 2 Willie and others, C SW NE, Section 4-14n-6w, Broomfield Township, Isabella County, and the Wittmer Oil & Gas Properties' No. 1 McKenzie, NE NE, Section 25-15n-4w, Isabella Township and county. No. 2 Willie is about half a mile from other dry Marshall gassers in the Broomfield Township area where six wells have an aggregate open flow capacity estimated at 25,000,000 feet and the Wittmer well is one township west of the Leaton Pool.

Clare County

In Clare County, Henry M. Brown's No. 1 McKay-Mercier, NE NE SE, Section 1-17n-5w, Surrey Township, was dry in the Marshall but is being given a greater test.

Muskegon Field

Wells to be deepened to the Monroe formation encountered in the Muskegon Field at about 200 feet below the Dundee are as follows: Muskegon Oil Corp.'s No. 1 Bouwsma, SW NW NE, Section 5-10n-16w; Reed Oil Co.'s No. 2 Hill, NE SE, Section 8-10n-16w; Blue Arrow Petroleum Co.'s No. 1 Laman, SW NE, Section 8-10n-16w; Johnson Oil Refining Co.'s No. 1 Van Allsburg, NE SE, Section 5-10n-16w; and Paragon Oil Co.'s No. 1 C. Tripp, SE SE, Section 5-10n-16w.

The Lima Oil Corp. also is reported to be considering deepening one of its wells on the Muskegon River flats to the Monroe.

Two wells being plugged back to the lower Traverse are J. V. Howard's No. 1 Charles Cook, NW NW, Section 8-10n-16w, and Middlewest Oil Co.'s No. 3 Mrs. Moch-Heirs, SE NE, Section 7-10n-16w. Both are known to have commercial production in the lower Traverse as they passed through it on the way to the Dundee.

Three wells being plugged and abandoned are as follows: Johnson Oil Refining Co.'s No. 2 Mrs. Edward King, SE NW, Section 11-10n-17w, Laketon Township; Nelson and Witt's No. 1 F. J. Gates, Section 11-10n-17w, also Laketon Township; and Puritan Oil Co.'s No. 1 W. Burns, SE SE, Section 5-10n-16w.

Two structure test wells drilled in Fruitland Township, Muskegon County, northwest of the proved field about 5 miles, are being plugged and abandoned. Both were drilled to the red rock, or about 900 feet deep by the Reed Oil Co. They are: No. 1 H. Mann, NE NE, Section 29-11n-17w, and No. 1 C. L. Bullock, S half NE, Section 15-11n-17w.

A third Fruitland Township test of the Reed Oil Co. is No. 1 A. Sparre, SW NW SW, Section 9-11n-17w. It is shut down but not abandoned.

The Johnson Oil Refining Co. has plugged its third test well in Trowbridge Township, Allegan County. No. 1 Holland, NW SW SW, Section 26-1n-13w. The Johnson company has decided to abandon its operations as well as leases in Allegan County, according to Oscar Davis, Muskegon representative.

No new reports have been received this week from the Fruitvale Land & Lot Owners' No. 1 C. J. Sipple well, SW SW, Section 23-13n-16w, Otto Township, Oceana County, although it is understood that the well has been tested on the pump for a show of oil struck several weeks ago in the upper Traverse at 1,955-60 feet. A permit was issued for the Kalamazoo Improvement Co.'s No. 1 George Hornick, SW NW SW, Section 15-14n-2w, Greendale Township, Midland County, on the east edge of the proved Mount Pleasant Field.

New Wildcats

Operators are talking of drilling two new wildcats in Muskegon County, one in the northeast corner of Fruitland

(Continued on Page 181)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	4,875	cleaning out
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	rig	suspended
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	4,870	sd. sh. drilling
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-15	....	material
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	cleaning out
Allison Synd., No. 1 Baldwin, Los Angeles Co.	8- 2-14	4,650	sd. sh. drilling
Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 3-14	3,300	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	rig	rigging up
Westwood Pet., No. 1 Hermosa, Los Angeles Co.	6- 4-14	rig	suspended
Tulsa Oil Co., No. 1 Hermosa, Los Angeles Co.	6- 4-14	rig	rigging up
Wood, C. L., No. 1 Hawthorne, Los Angeles Co.	10- 3-14	2,184	suspended
Alondra Co., Ltd., No. 1 Hawthorne, Los Angeles Co.	23- 3-14	rig	suspended
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	rig	suspended
McKeon Drlg. Co., No. 1 Watts, Los Angeles Co.	1- 3-14	4,650	sd. sh. drilling
Shelley, C. M., No. 1 Torrance, Los Angeles Co.	12- 4-14	rig	suspended
Mack Oil Co., No. 1 Chatsworth, Los Angeles Co.	6- 2-16	rig	suspended
San-Van Oil Co., No. 1 Van Nuys, Los Angeles Co.	14- 1-16	1,702	gr. sd. drilling
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	1,000	sd. sh. drilling
Bardeen Pet., No. 2 Puente, Los Angeles Co.	2- 2-10	2,690	sd. sh. drilling
Vega Pet. Corp., No. 1 Puente, Los Angeles Co.	14- 2-10	2,510	100 bbls.
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,092	suspended
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,030	sd. sh. drilling
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	rig	rigging up
Celito Oil Co., No. 1 Monterey Park, Los Angeles Co.	28- 1-12	5,278	suspended
Wolfe, Geo., No. 1 Alhambra, Los Angeles Co.	24- 1-13	1,375	sd. sh. drilling
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	2,280	suspended
Rancho Oil Co., No. 1 Rosemead, Los Angeles Co.	30- 1-11	2,698	sd. sh. drilling
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	5,695	recemented
Nesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	790	suspended
Gesell, T. F., No. 1 Newport, Orange Co.	29- 6-10	885	suspended
Standard, No. 1 Newport, Orange Co.	26- 6-10	3,750	hd. sd. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	4,175	suspended
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	redrilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,392	suspended
San-Col Oil Co., No. 1 Colton, San Bernardino Co.	18- 1- 4	240	suspended
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	1,511	br. sh. drilling
The Texas Company, No. 1 Olive, Orange Co.	7-4- 9	2,000	sd. sh. drilling

Well Flows 320 Barrels in First Hour

Third Woodbine Sand Pool Opened in East Central Texas First in Gregg County. Question Whether All Will Eventually Connect

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Jan. 26.—Another large discovery well has added the third Woodbine sand pool to the new producing areas of East Central Texas, these three pools having been uncovered within four months time, a record for discoveries in any one district, especially of discoveries which promise such large production as wells in these areas presage. Leasing and royalty buying has been gathering momentum in and adjacent to the new areas in this district, and the small towns in the vicinity of the wells cannot begin to accommodate the many people who have flocked to them within the past few months, especially since the holidays when the Bateman discovery well on the Crum farm near Kilgore in Rusk County blew in appearing as a 15,000 to 20,000-bbl. well. Since that discovery buying has been progressing at a rate which has not been duplicated in Texas for a long time, and now since the discovery of a new area operators and companies alike will hardly restrain themselves in buying acreage all over the surrounding counties. Companies were slow in entering the eastern half of the salt basin, and they are paying for their willingness to be first in buying and testing the area, but nevertheless they have come to the conclusion that this part of the basin probably offers more than any other part, or has at least proven so, and they are now rushing in to purchase protection acreage.

First Oil Field in Gregg County

The well which came in today, opening the first oil field in Gregg County, is owned by the Arkansas Fuel Oil Co. (subsidiary of the Cities Service Corp.), J. E. Farrell and others and is located on the J. K. Lathrop farm in the William Robinson Survey, approximately 6 miles northwest of the town of Longview. About 10 days ago the test cored 4 feet of saturated sand and was shut down to run casing. Since that time it had been standing with casing cemented until January 25 when testing was commenced and the well drilled 7 feet more of saturated sand to a total depth of 3,687 feet. It was shut down at this depth to run liner, but blew out part of a hole full of rotary mud and almost got away from the operators.

It made 36 bbls. the first 20 minutes through a seven-eighths-inch choke, and flowed 320 bbls. the first hour through 3-inch tubing and one-half-inch choke, oil going into two 1,000-bbl. tanks which had been erected to take care of an emergency. Gravity of the oil tested 39.6 A.P.I. which is almost identical in texture to the oil found in the Joiner Pool, Rusk County, 23 miles to the south, and the Bateman well, in northern Rusk County, only 10 miles to the south. Top of the pay was given as 3,570 feet and the 6⅝-inch casing was cemented at 3,550 feet.

The Arkansas Fuel Oil Co. purchased 3,500 acres of the former block leased by J. E. Farrell of Fort Worth, and will operate the well and block, intending to run a line, probably an 8-inch to Louisiana refineries and lines which are owned and controlled by the Cities Service Corp. Such a line would be approximately only 45 miles long. Two more 1,000-bbl. tanks are being erected at the well.

Company men and independent geologists and operators are still in doubt as to just how to theorize in regard to the three separate producing areas; some continue to believe that sand lenses alone are responsible for the three pools, and that they will not be connected by production, while still others say these are the greatest discoveries in the oil industry and will be linked together by wells drilled on intervening acreage. If the latter is true no field in the world will equal this East Central Texas Field which has long been overlooked as a possible producing area. It will have great weight in changing the aspects of proration, may probably affect the price structure, and yet may bring about the very formula needed in reconstructing the industry and putting it upon its feet again. What it will do to proration in Texas, and how it will affect the general price structure remains to be seen.

Sinclair Enters Joiner Pool

The Sinclair Oil & Gas Co. is entering the Joiner Pool, Rusk County, and may drill the lately purchased 85 acres to the limit, producing its wells to the maximum, as it is believed the company will build a line to the I.&G.N. Railroad, 3½ miles to the north and erect a loading rack at Friar Switch, shipping out oil by tank car to its Houston refinery. It is now purchasing some oil in the field, loading it out from one of the loading racks which has been in operation at Friar Switch for some time.

The acreage in the Joiner Pool purchased by Sinclair is a 50-acre tract in the Juan Ximenes Survey, north of the Foster, Deep Rock Oil Co. and others' large well on the Ashby tract. Another 35-acre tract was purchased to the south of this well, from the Standard Pipe & Supply Co., at Dallas. Both tracts look exceptionally well located to produce large wells, if the Foster, Deep Rock well can be taken as a criterion for offset wells.

Price of this acreage was not given out when the deal was divulged. The Sinclair Oil & Gas Co. owns checkerboarded acreage in various parts of East Central Texas, especially in Rusk and Gregg County, and has been making a spirited play in these two counties since the late discoveries. The late buy in the Joiner Pool makes positive the idea that the company desires oil from this district where sweet high gravity oil is produced. Sulphur crude oil from West Texas never attracted the company to that district, and heretofore the company has been slow in purchasing acreage over the state, but this district has attracted the Sinclair Oil & Gas Co. as it has attracted many others who were slow in entering the area.

Talk of Proration

If the new areas are to be prorated something will have to be done immediately. Operators and company representatives, in conjunction with district representatives from the various towns in the district, will hold a meeting in Longview on the evening of January 27 to discuss possible proration in the district. Many are inclined to favor prorating the new areas, while others seem to think the district is to break general proration in the state, at least they believe it will not hold in these new areas. Pipe lines to the Joiner Field, coupled to a newly constructed loading rack, with promises of other lines entering the fields to transport oil to Louisiana and to the Gulf Coast, do not make the proration of the new areas look any too favorable. Two 4-inch lines are in the Joiner Field running oil at the present time, one being looped to date, and two other 4-inch lines are being built from the field to two other loading racks which are under construction. The East Texas Refining Co., is starting the construction of a modern 6,000-bbl. pipe still near the pool on the I.&G.N. Railroad. The Overton Pipe Line Co. is another company reported planning to lay a 6-inch pipe line from the Joiner Pool to the town of Overton, approximately 8 miles to the northwest of the pool, making the fifth line for the Joiner Pool, and as many refining and purchasing companies seem desirous of this high gravity sweet crude at the low price for which it is being sold, there is no telling just how many more lines or purchasing companies will enter this field.

Production

Daily average production of the pools in the East Central Texas area for the week ending January 24:

Boggy Creek	2,870
Cedar Creek	45
Currie	325
Hill County	30
Mexia	3,936
Minerva	480
Nigger Creek	189
Powell	5,298
Richland	105
Rusk County	3,602
Thrall	35
Van	27,727
Wortham	610
Total East Central Texas	45,243
Week ended January 24	43,909
Increase	1,334

Bateman Area

To the north in the Bateman area, the Houston Oil Co. is erecting two 55,000-bbl. tanks on the northwest corner of the D. M. Peterson heirs farm in the I. Ruddle Survey, on the I.&G.N. Railroad, and will construct a gathering line to wells drilled around the Bateman block, and will ship oil to its refinery at Camden, Ark., and to Houston, Tex.

The Humble Oil & Refining Co. which is checking titles of the acreage comprising the Bateman block preparatory to closing contract for the block, is busy constructing a main line pumping station southwest of Longview on its 10-inch welded line from the Van Field, Texas, to Louisiana, and survey is being made for a line from this station, a reported 8-inch, to the Bateman well and block. Due to the many lines going into the Joiner Pool, the Humble Oil & Refining Co. will perhaps stay out of it as a purchaser.

There are six derricks up and wells drilling on acreage surrounding the Bateman block, with locations staked for others.

Joiner Pool

H. L. Hunt, Inc., drilled in the seventh producer in the Joiner Pool this week, the well flowing 209 bbls. the first five hours and then ceasing to flow as did the discovery well of the field. Oil sand in this well was cored from 3,517-58 feet. Total depth is 3,575 feet. It is approximately 1,000 feet west of the discovery well.

Rusco Oil Co.'s No. 1 Bradford in the Juan Ximinez Survey, about one-half mile south of the discovery well, is standing with 6⅝-inch casing cemented. Total depth is 3,541 feet. The test cored oil sand from 3,530-41 feet, and is sure of making a producer, extending the field in that direction.

Lide and others' No. 1 Young, approximately 1½ miles southwest of the Foster, Deep Rock Oil Co. and others' No. 1 Ashby extension in the Joiner Pool, is appearing as another extension after coring saturated sand from 3,677-88 feet. It is standing at the latter depth to run

(Continued on Page 168)

EAST CENTRAL TEXAS WILDCATS

Week Ending January 26

CHEROKEE COUNTY

Lloyd Oil Corp.'s No. 1 Tommie, 200 ft. S of CNL of 59.2-ac. tract in William George Sur., 2 miles SW of Troup ..... Rig (rotary).

McDonald Bros.' No. 1 Newton, center of 113-ac. tract, Thomas Quevedo Sur., 3 miles N of Jacksonville .... Rig on ground.

Moore & Baker's No. 1 M. M. Tommie, 945 ft. N and 1,300 ft. E, William George Sur. ..... Derrick.

DELTA COUNTY

Delta Development Co.'s No. 2 Hays Kinney, 300 ft. S of No. 1 Cooper, Townsite Sur. ..... Shut down 1,161 ft.

D. S. Hoods' No. 1 J. J. Balser, 185 ft. from S and 580 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur. ..... Shut down 1,550 ft.; will test oil show.

Everett Drlg. Co.'s No. 1 Sansivy, 1,320 ft. N and 1,320 ft. W, J. B. Craig Sur. ..... Drlg. 1,406 ft.

Worthington and Stedman's No. 1 W. H. Dejehett, 150 ft. from S and 776 ft. from W of 52-ac. tract, E. Chick Sur. ..... Shut down 1,385 ft.

FANNIN COUNTY

E. A. Parsons et al's No. 1 Morgan in the English Sur., 3 miles NE of Savoy ..... Shut down 3,481 ft.

GREGG COUNTY

Arkansas Fuel Oil Co., J. E. Farrell et al's No. 1 J. K. Lathrop, 661 ft. from N and 1,194 ft. from W of 96-ac. tract, William Robinson Sur. ..... Flowed 320 bbls. in 1 hr. through one-half-inch choke; top sand 3,570 ft.; T. D. 3,587 ft.

M. S. Hammond's No. 1 J. M. Hamby, 278 ft. from E line, 1,667 ft. S of Hamby 3,800-ac. tract, Martin Lant Sur. ..... Shut down 2,675 ft.

George McCamey et al's No. 1 J. F. Richards, 150 ft. from N and 150 ft. from W of 50-ac. tract, Mary Van Winkle Sur. ..... Derrick.

HENDERSON COUNTY

M. E. Ashburn et al's No. 1 T. E. Barry, center of Barry 59-ac. tract in A. York Sur. ..... Shut down 3,993 ft.

E. L. Chapman's No. 3 Cade, 1,560 ft. from N and 750 ft. W, J. B. Dorsey Sur. ..... Drlg. 4,055 ft.

HUNT COUNTY

Mamie S. Hammond's No. 1 W. H. Adams, center of survey, W of Branson Sur., J. A. McFarland Sur. ..... Derrick blew down.

LIMESTONE COUNTY

Ben Segall & Hundall's No. 1 A. E. Smith, 750 ft. from E and 300 ft. from S, M. N. Miller Sur. ..... Drlg. 2,652 ft.

LAMAR COUNTY

Everett & Allen's No. 1 Guest, 250 ft. S and 2,046 ft. E of 100-ac. tract, L. Roberts Sur. ..... Shut down 664 ft.

NAVARRO COUNTY

Young et al's No. 1 Farmer, 700 ft. from S and 400 ft. from E of 110-ac. farm in Finley Sur. ..... Shut down 960 ft.

POLK COUNTY

Sunshine Oil Co.'s No. 1 J. A. Collins, 313 ft. from NE, 150 ft. from SE at right angles to line, A. Viesca Sur. ..... Shut down 3,350 ft.

RAINS COUNTY

Everett & Morrison's No. 1 Franklin, 640 ft. from S and E of 75-ac. tract in John Christian Sur., 6 miles SE of Emory ..... Spudded and shut down.

(Continued on Page 170)

Second Best Well in Sullivan District

Worley-Reynolds District Has Producer Estimated at 3,826 Bbls. Initial. Eastern Young County Getting Play

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Jan. 26.—A statewide proration hearing was held by the Railroad Commission at Austin on January 22 at which time nominations of the various districts for the ensuing period were given by David Donoghue, technical advisor of the central proration committee. The Panhandle nominations totaled 40,000 bbls. per day, which is the daily allowable that was formerly chosen for the district at a meeting of Panhandle operators in Fort Worth in December. This figure was cut from the past total allowable of 64,500 bbls. per day, and although the production has never been brought down to near this amount it has been slightly decreasing. Total daily average of the week showed the district producing 58,405 bbls., whereas the previous week it was only 57,706 bbls. This increase was due to several wells, especially two large ones being completed this week.

Skelly Oil Co.'s No. 1 Heitholt in Section 153, Block 3, I.&G.N. Survey, in the Sullivan area, came in last week as the second best well of this new area on the western side of Gray County. It flowed a total of 2,950 bbls. in 12 hours with 36,000,000 feet of gas from the granite wash pay which was topped at 2,995 feet. The North American Oil & Gas Co. brought in its No. 1 Sullivan in Section 160, Block 3, approximately 1 mile west of production in the Sullivan area, marking an extension to the field although the well made only 24,000,000 feet of gas from 2,460-2,600 feet with no oil. Total depth is 2,640 feet. The Magnolia Petroleum Co. also completed a small well in the area this week in its No. 2 Heitholt in Section 152. It made an initial production of only 75 bbls. at a total depth of 3,302 feet. Top of the pay was logged at 3,270 feet.

Cree and Hoover completed a small well on the western edge of the Worley-Reynolds area in the southwestern corner of Section 5, Block 3. This pool topped the pay at 3,200 feet and was shot with 90 quarts from 3,200-50 feet, completed for an initial production of 192 bbls. Total depth is 3,253 feet.

Good Well in Worley-Reynolds

The Wilcox-Pampa Oil & Gas Co. completed its No. 34 in the Worley-Reynolds area for an initial production which harked back to previous months when the flush production areas of the county were proving up big wells every week. This well was completed for an initial production of 3,826 bbls. at a total depth of 3,002 feet. Top of the pay was found 2 feet above this depth, 3,000 feet. Location of the well is in Section 84, in the southern part of the pool.

The North Texas, Wichita Falls, district was given total daily nominations of 57,245 bbls. in Mr. Donoghue's report to the Railroad Commission at the Austin hearing, and West Central Texas was given total nominations of 24,000 bbls. North Texas and West Central Texas' combined total daily allowable was cut 40,000 bbls. per day under the daily allowable given in Mr. Donoghue's first report to the Railroad Commission on July 31 when the first statewide proration hearing was held at Austin.

J. M. Gholson, umpire for the West Central Texas or Ranger district, testified that there were 5,000 wells in his district producing not more than 3 or 4 bbls. per day, all being strippers, and having a total allowance of 7,200 bbls. He also stated that there were many other old wells which had a total potential of 3,200 bbls. per day, having no outlet at all, and to close these wells down would cause them to go to water and lose the oil.

The Burkett Pool, Coleman County, which has seen considerable drilling during the latter part of 1930 due to the Arcadia Refining Co. bringing in a mile extension well, is one of the areas in the Ranger district which has been needing an outlet, considerable storage having been erected to help accommodate the wells drilled in. The Humble Pipe Line Co. indicated that it would probably take a portion of the oil from the field although it would have to run several miles of line to the area, unless the operators themselves run a line.

The Arcadia Refining Co. stated it had four wells in the pool capable of averaging 450 bbls. each, and that it had been able to find only a bootleg market for its oil, and that it had volunteered to build its own line to some nearby main line of a major purchasing company, but the offer was not accepted. This is one more area in the Ranger district suffering for pipe line outlet and greater allowable production.

Activity in Eastern Young

Around the Panhandle Production & Refining Co.'s No. 1 Cox in the Indianola Railroad Survey, eastern Young County, which came in three weeks ago for a large gas well spraying around 80 bbls. per day, much leasing for gas acreage has been going on, the Lone Star Gas Co. and Brazos River Gas Co. being the most active purchasers in the area. The latter company connected to the well and is taking 2,400,000 feet of gas per day. One lease on the north 50 acres of the west 100 acres of the Indianola Railroad Survey calls for a well to be drilled by the Brazos River Gas Co.

The Danciger Oil & Refining Co. and Staniforth's No. 1 C. Jacobs, located 3,243 feet from the south and 450 feet from the west lines of the John Strickland Survey, Abstract 929, southwestern Cooke County, is the best well yet drilled in the Jacobs area which was opened a few months back by the Lloyd Oil Corp. in its No. 2 Jacobs. The Danciger well flowed and swabbed 200 bbls. in 24 hours from pay topped at 1,505-23 feet. Gravity of the oil tests only 24 degrees, but it is said to contain about 63 per cent gasoline.

Several wells have been drilled in this area, none of them making as good wells as this one, and some have been abandoned as dry or not worth producing. Due to these small wells the area has not been of much interest, although leasing in the area was stimulated by the discovery of the first producer.

Deep Tests in North Texas

The Deep Oil Development Co. of Wichita Falls, which is drilling several deep tests in the North Texas district, encountered a saturated lime at 3,675-97 feet in its No. 1 Munger test in Block 30, W.K.V.L. Survey, Wichita County, the showing testing 5 bbls. of oil per hour on the swab. However, this showing was drilled through, and it is now drilling below 3,800 feet.

Nash and Windfohr drilled in their No. 2 Graham, 250 feet south and 4,000 feet west of the SW cor. of the Alan Hines Survey, Abstract 135, but in Section 3,410, T.E.&L. Survey, in the Graham Pool, Young County, the well being estimated good for only 100 bbls. per day from sand topped from 2,684-88 feet. This is a much different well than the two associates brought in last summer in their No. 1, which came in for an initial production of 1,000 bbls. per hour. However, that well was proved phenomenal, for no other deep tests in this pool have produced like it did, and many such tests were abandoned as dry.

There was a total of 25,464 bbls. daily run to stills at Wichita Falls during the week, an increase of 5,741 bbls. per day over the previous week's runs.

Just across the Coleman line in Callahan County, the deep test of Warren and Hays on the Johnson farm in Section 146, G.H.&H. Survey, is making an estimated 200,000 feet of gas and spraying 40 to 50 bbls. of oil per day, promising another producing area for this country, as it is a considerable distance from the nearest production, and is about a mile south of an old well which formerly produced, but was finally abandoned on account of water displacing the oil.

NORTH TEXAS PRODUCTION
Week Ending January 24

	Bbls.
Panhandle district—	
Carson County	4,695
Hutchinson County	10,290
Gray County	43,451
Moore County	240
Potter County	9
Wheeler County	330
Total production this week	58,405
Total production last week	57,706
Increase	699
Wichita Falls district—	
Archer County	12,091
Baylor County	923
Clay County	596
Cooke County	2,014
Foard County	97
Jack County	1,102
Haskell County	19
Montague County	4,179
Throckmorton County	370
Wilbarger County	13,120
Wichita County	20,329
Young County	11,224
Total production this week	66,070
Total production last week	66,301
Decrease	231
Ranger district—	
Brown County	4,111
Callahan County	1,960
Coleman County	1,501
Comanche County	940
Palo Pinto County	431
Eastland County	3,360
Shackelford County	4,246
Stephens County	4,637
Total production this week	21,173
Total production last week	20,896
Increase	277

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending January 26

CARSON COUNTY

Company, well, farm name, section and block—	Remarks—
Continental Oil Co.'s No. 1-A Jordan, 330 ft. S, 1,320 ft. W, SW, Sec. 123, Blk. 4, I.&G.N. Sur.	Rigging up.
Interstate Prod. Co.'s No. 1 Burnett, C SE, Sec. 100, Blk. 4, I.&G.N. Sur.	Drlg. 540 ft.
Krebs & Barnard's No. 1 Barnard, 660 ft. S and W. NW, Sec. 24, Blk. 4, I.&G.N. Sur.	C.O. 2,982 ft.
Plains Holding Co.'s No. 1 Kalka, C NE NE, Sec. 43, Blk. 4, I.&G.N. Sur.	Fishing 2,500 ft.
Magnolia Pet. Co.'s No. 1 Burnett, 330 ft. N and W. W½ NW, Sec. 101, Blk. 4, I.&G.N. Sur.	T.P. 2,988 ft; T.D. 3,159 ft; plugging back.
North American O. & G. Co.'s No. 1 Polling, 1,320 ft. N, 1,500 ft. E, Sec. 24, Blk. Y-2, T.T.R.R. Sur.	Drlg. 2,290 ft.
Plains Holding Co.'s No. 1 M. P. Co. fee, C N 10 ac., N½ NW SW, Sec. 40, Blk. 4, I.&G.N. Sur.	Rig on ground (rotary).
Red River Gas Co.'s No. 5-A Bivins, 1,320 ft. S, 660 ft. E, Sec. 45, Blk. B-20, G.&M. Sur.	Rotary rig on ground.
Texas Interstate P. L. Co.'s No. 1 Burnett, C S½ SE. Sec. 81, Blk. 5, I.&G.N. Sur.	Rigging up.
Texas Interstate P. L. Co.'s No. 1 Burnett, C E½ SE. Sec. 51, Blk. 5, I.&G.N. Sur.	Rotary rig.

CHILDRESS COUNTY

C. L. Sloane et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands	T.D. 5,000 ft.

COCHRAN COUNTY

Continental Oil Co.'s No. 1-B Slaughter, 4,950 ft. N and E, of League 134, Armstrong County School Lands	Set 15½-in. csg. at 247 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur.	Fishing 525 ft.

COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrini's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur.	Cable tools; contract 5,000 ft; set 13⅜-in. csg. 1,708 ft.

GRAY COUNTY

Adams, Prince et al's No. 1 Morse, 330 ft. NE SE, Sec. 6, Blk. 26, H.&G.N. Sur.	Estimated 7,000,000 ft. gas 2,050 ft; estimated 17,000,000 ft. gas 2,245-60 ft; T.D. 2,300 ft; rig burned; to rebuild.
British-American Oil Co. and Shell Pet. Corp.'s No. 1 Smith, 330 ft. S and E, NW, Sec. 138, Blk. 3, I.&G.N. Sur.	Location.
Beck's No. 1 Sullivan, 330 ft. N and E, W½ NW, Sec. 135, Blk. 3, I.&G.N. Sur.	Estimated 30,000,000 ft. gas 2,520-2,650 ft; 5,000,000 ft. gas 2,845-50 ft; T.D. 2,868 ft; (S.L.M.); C.O.
Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur.	Spudded and S.D.
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur.	S.D. 740 ft.

(Continued on Page 172)

COMPLETIONS IN NORTH CENTRAL TEXAS

Archer County

L. E. Burnett's No. 1 McCrory, trustees, dry and abandoned, total depth 1,605 feet. Golding-Cochran and Stanolind Oil & Gas Co.'s No. 3 Lanster, top pay 1,268 feet, initial production 15 bbls., total depth 1,275 feet. M. D. Gollsmith's No. 1 Richardson, dry and abandoned, total depth 1,350 feet. George L. Pace's No. 3 Arnold, top pay 1,193½ feet, initial production 50 bbls., total depth 1,218 feet.

Baylor County

Smith and others' No. 1 Upshur County School Lands, dry and abandoned, total depth 1,722 feet.

Jack County

Brazos River Gas Co.'s No. 2 Jones estate, gas sand 1,660-72 feet, initial production 750,000 feet of gas, total depth 1,672 feet.

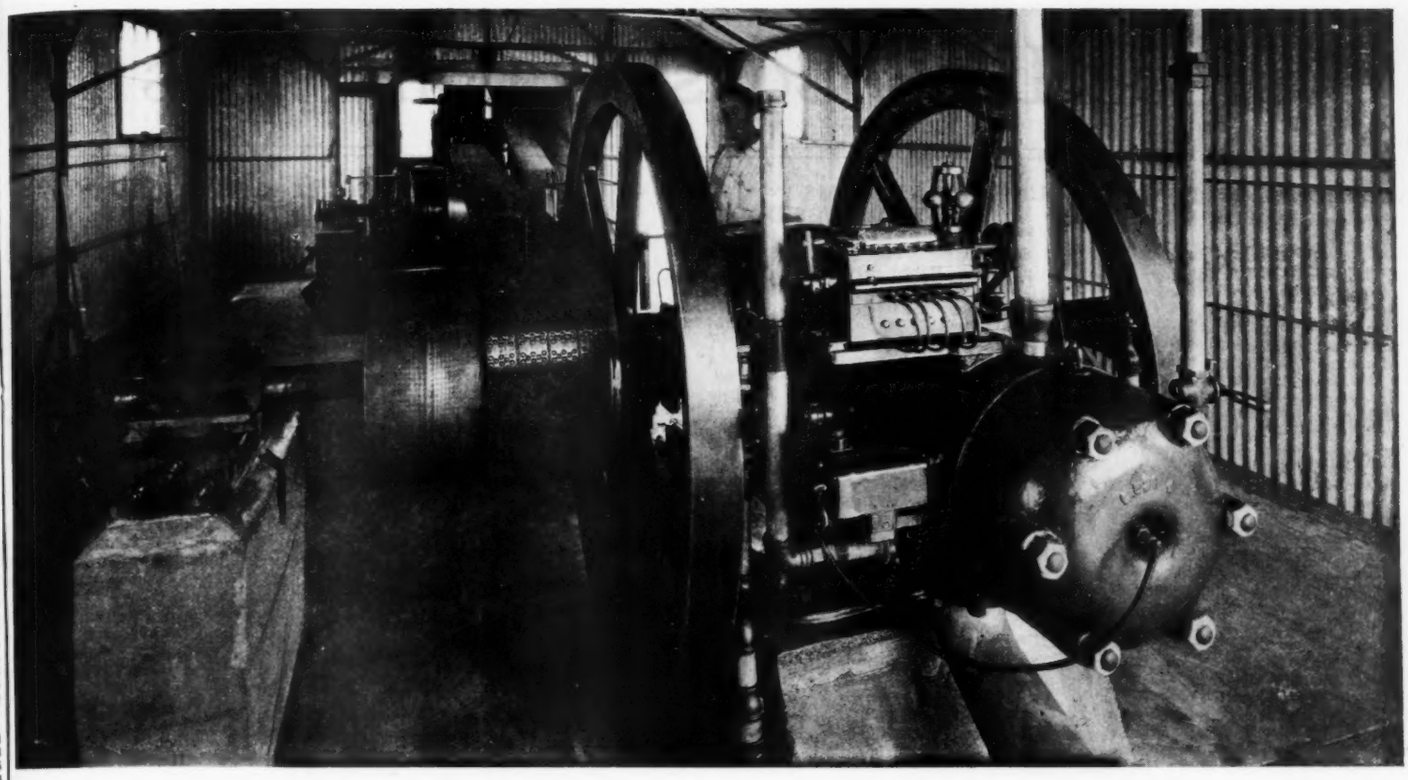
Throckmorton County

Sevain, Holcomb and others' No. 1 Mathews, dry and abandoned, total depth 896 feet. Merry Brothers and Perini's No. 1 Mathews, dry and abandoned, total depth 1,005 feet. Seitz, Comegys and Seitz' No. 1 McKeicham and others, dry and abandoned, total depth 806 feet, formerly completed October 8, 1930, for an initial production of 8 bbls., total depth 737 feet.

Young County

Alexander and others' No. 1 Ward, dry and abandoned, total depth 701 feet. Ard, Floyd and others' No. 1 Belknap Cattle Co., dry and abandoned, total depth 800

(Continued on Page 170)



Oil producer's power troubles *ended* by Correct Lubrication

A southern oil producer had regular monthly expense for repairs on two heavy gas engines with resultant pumping time lost.

After his operating conditions had been studied by a Vacuum Oil Company representative who prescribed the correct Gargoyle lubricant for that type of engine, repair troubles were practically ended.

This operator reports that he now spends only a small part of the time formerly lost to make needed repairs and adjustments and that his repair expense is only 4% of the previous expense.

(From Vacuum Oil Company File No. 7208)

IF you are having lubrication or repair troubles with any type of prime mover or machine, Vacuum engineering counsel can save you trouble and money.

Your request for a Vacuum representative to call incurs no obligation.

The following benefits result from Correct Lubrication:

1. Reduced friction
2. Reduced power consumption
3. Continuity of production
4. Reduced maintenance costs
5. Prolonged useful life of machinery
6. Reduced ultimate cost of lubricants and labor of applying them
7. Reduced total production costs

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Pipe Line Construction News

ADDITIONAL ORDERS PLACED FOR LINE PIPE

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 26.—National Tube Co. has received an additional order for line pipe, 18-inch and 24-inch, about 80,000 tons for the Continental Construction Co.'s gas line from the Texas Panhandle to Chicago. Initial orders for this line were placed in May of last year. It appears that a little more pipe will have to be built for the line. The pipe just ordered will be seamless, probably made at either Gary or Lorain. The Gary seamless tube mill was completed a year ago, the Lorain a few months later. A third seamless, at McKeesport, is practically completed but has not yet been put in operation.

For a line for the Columbia Gas & Electric Co., Youngstown Sheet & Tube Co. has been awarded about 200 miles of 20-inch electric weld, between 30,000 and 35,000 tons, and about 150 miles more for this line remains to be placed.

Line pipe buying in volume has thus opened up earlier this year than last, as it was not until the latter part of March of last year that there was much buying. Various projects are now being worked on, and have been for a couple months, but there are various delays, including matters of rights of way and franchises, while in banking circles it is said that some of the projects may prove difficult to finance at the present time. Others doubtless will be easy.

Prices on standard pipe are reported perfectly steady all along the line, as has been the case for a long while. The last price change was on April 1, 1930, when card discounts were increased uniformly two points, making the basing discount 64 per cent instead of 62 per cent.

The steel trade considers it probable that recession in general business ended by the close of last year, but is indisposed to assume that ending of the descent insures an early beginning of an ascent. The year can easily do better in tonnage than the last three months of last year, by far the poorest quarter of last year. The average rate of steel ingot production in the last quarter was 28,000,000 tons per annum or about 44 per cent of capacity, December averaging scarcely 40 per cent. Last week's rate was about 44 per cent, showing some recovery and suggesting that this quarter will total somewhat above last quarter.

Finished steel prices are steady all along the line and have been so for more than a month, after a long period of shading in several lines.

MONTANA GAS LINES

CASPER, Wyo., Jan. 24.—At a special session of the town council of Columbia Falls, in Flathead County, northwestern Montana, steps were taken to grant a franchise to the Northwestern State Utility Co. which contemplates installing a natural gas system, Columbia Falls being directly on the line of the proposed gas pipe line from the Cut Bank district to Spokane. A special election will be called.

Armells Petroleum Co. has applied for a 25-year gas franchise in the city of Lewistown, the gas to be produced at wells drilled by the Sabine Production Co. on the Armells structure. A group of some 60 Lewistown business men visited the company's wells near the city.

BEEVILLE-SKIDMORE LINE

HOUSTON, Tex., Jan. 24.—Houston Pipe Line Co. has started laying pipe on a 10-mile gas line from Beeville to the town of Skidmore, Bee County. The line, which is 2-inch, will supply natural gas to the latter town. It will tie-in at Beeville with the company's trunk line out of Refugio.

UNITED GAS FORMS OPERATING SUBSIDIARY

HOUSTON, Tex., Jan. 26.—The United Gas Public Service Co. has been incorporated under the laws of Delaware to be the principal operating subsidiary of the United Gas Corp., according to announcement from the general offices of the United Gas System in Houston. The purpose of organizing the new company was to simplify the operation and corporate structure of the operating subsidiaries of the United Gas Corp. and to provide for the development and extension of its properties and service.

The properties of a number of present subsidiaries, all of the securities of which are owned by the United Gas Corp., are being secured by the United Gas Public Service Co., and these companies will be liquidated and securities of numerous other subsidiaries of the United Gas Corp. are being acquired by the United Gas Public Service Co. All of the securities of every kind to be presently issued by the United Gas Public Service Co. will be owned by the United Gas Corp.

The United Gas Public Service Co. will own and operate an extensive natural gas system covering portions of Texas, Louisiana, Mississippi, Alabama and Florida, including natural gas wells and producing acreage, pipe lines and distribution systems.

The properties now being acquired by the United Gas Public Service Co. include the properties of the Louisiana Gas & Fuel Co., gas-producing properties in Louisiana owned by the Texas-Louisiana Production Corp.; the gas transmission and distribution properties hitherto known as Texas-Louisiana Pipe Line Corp.; the Southwest Distributing Co.; recently organized pipe lines extending from a point north of Jackson, Miss., to Mobile, Ala., Opelousas, La., Gulfport, Miss., and Pensacola, Fla., as well as certain other natural gas producing pipe line and distribution properties.

In addition to owning and operating the properties referred to, the United Gas Public Service Co. is acquiring from the United Gas Corp.—and will own directly or indirectly, all or substantially all, and in no case less than 97 per cent of the common stock, a substantial percentage of the preferred stock, and in most cases a large percentage of the bonds and debentures of certain companies owning properties in Texas and Louisiana which are connected for the most part with properties now being acquired and directly owned by the United Gas Public Service Co.

Included among the companies whose securities are now being acquired by the United Gas Public Service Co. are: The Palmer Corp. of Louisiana, Southern Gas Co., United Production Corp., Dixie Gas & Utilities Co., Houston Gulf Gas Co., Houston Gas & Fuel Co., Southern Gas & Fuel Co., Southern Gas Utilities, Inc., Northern Texas Utilities Co., and South Texas Gas Co.

TEXAS-CHICAGO CONTRACT

DALLAS, Tex., Jan. 24.—President T. R. Jones of the Oklahoma Contracting Co., announces his company has obtained a contract for constructing 100 miles of 24-inch gas line from Muscatine to Knoxville, Iowa, and the Mississippi River line, which is a part of the Continental Construction Co.'s plan for supplying Chicago with Texas natural gas.

TEXAS CO. LINE IN KANSAS

The Texas Company's first pipe line in the State of Kansas was completed this week from the Ritz Pool to the Voshell Pool in McPherson County. The new line is 4-inch and 15 miles long. It connects the company's leases in the Ritz Pool area with the Empire Pipe Line Co.'s line in the Voshell Pool area. The Texas Company is now operating the line and is shipping its oil to the Empire Pipe Line Co.

TEXAS-CHICAGO LINE PROBLEMS DESCRIBED

NEW YORK, Jan. 26.—Problems encountered in the piping of natural gas 950 miles from the Panhandle area in Texas to Chicago and Detroit were described by Floyd C. Brown, vice president of the Continental Construction Co., at a talk before a luncheon meeting at the headquarters office of Henry L. Doherty Co. here recently.

Mr. Brown, who has been associated with Doherty activities for many years, is in complete charge of the construction of the new pipe line, which is being built by Cities Service Co. in conjunction with Standard Oil Co. of New Jersey, The Texas Corporation, Skelly Oil Co., Phillips Petroleum Co., Columbian Carbon Co., and the Insull interests of Chicago.

Mr. Brown outlined some of the difficulties experienced in securing pipe of suitable design and necessary strength, building valves and couplings to control the pressure under which the gas will be sent, and later, in planning the route of the line.

Particular study was required, he said, for the location of river crossings, and the avoidance of rugged country. Organization of the personnel of the company, which was formed expressly for the construction of this pipe line, was in itself a huge task, requiring the enlistment of many experts and specialists, Mr. Brown said.

When completed, the line will have involved an expenditure of approximately $100,000,000, Mr. Brown stated.

Among those who attended the luncheon and heard Mr. Brown's talk were the following: F. R. Coates, H. O. Caster, B. S. Watson, W. B. S. Winans, F. Walter Muelen, L. G. Coleman, F. L. Blackburn, J. F. Poggenburg, D. A. Straight, T. A. Wallace, C. E. Weger, J. M. Beauchamp, D. B. Carson, R. H. Chadeayne, M. I. Landa, D. F. Leary, A. M. Talbott, F. G. Gommel, E. W. Pembleton, O. J. Hinrichs, S. E. Murphy, C. E. Morlan, Abbott Oberndorfer and C. A. Chierson.

SHELL GETS GAS OUTLET

SAN FRANCISCO, Calif., Jan. 26.—The Shell Oil Co., subsidiary of Shell Oil Corp., has contracted with Standard Pacific Gas Lines, Inc., jointly owned by Standard Oil Co. of California and Pacific Gas & Electric Co., to transport up to 11,000,000 feet of gas daily from the Shell wells in the San Joaquin Valley to the Shell refinery at Martinez, Calif. Price consideration has not been announced.

The gas, a large part of which heretofore has been wasted, Shell officials advise, will be used for fuel to operate the refinery and other developments in the San Francisco Bay region controlled by Shell, including the $5,000,000 nitrogen fixation plant now under construction. The gas will be transported over the pipe line of Standard Pacific Gas Lines.

LINE TO ZWOLLE WELL

SHREVEPORT, La., Jan. 26.—The Standard Pipe Line Co. has started the construction of a gathering line in the Zwolle Field to take the production of the Loring Oil Co.'s No. 15 Bowman Hicks, in Section 2-17-12, which drilled itself in late Saturday for large oil and gas producer. A battery of storage tanks is being built, with two of the tanks already completed. A separator also is being installed.

CONSTRUCTION ACTIVITY IN EAST TEXAS AREA

FORT WORTH, Tex., Jan. 26.—The East Texas Refining Co., which is building a 6,000-bbl. pipe still 3½ miles north of the Joiner Pool on the W. B. Palmer farm on the branch line of the I.&G.N. Railroad which runs from the main line at Overton to the town of Henderson in Rusk County, is running a 4-inch line from the Joiner Pool, Rusk County, to the refinery location where a 30-car loading rack is being built.

The company is now clearing space for the refinery, building one 80,000-bbl. tank and the loading rack, and is unloading pipe for the line from the field to the refinery and rack at Friar Switch. One more 80,000-bbl. tank is to be constructed. An electric pumping unit will be installed in the field on the line to pump to the loading rack and refinery.

This gives the newly opened producing area in East Central Texas its first refinery.

The Petroleum Marketing Co. is stringing 4-inch pipe for its line from the Joiner Pool to a loading rack which is under construction at Friar Switch on the I.&G.N. branch 3½ miles north of the pool. This is a subsidiary company of the Warner-Quinlan Co.

H. L. Hunt, Inc., is constructing a water pumping unit in the Joiner Field to serve the many different leases and drilling rigs with water from the small stream which runs through the field. Two boilers have already been set for this unit which is the first in the field.

The Humble Oil & Refining Co. is constructing a main line Diesel-powered pumping station approximately 2½ miles southwest of Longview on its Va[illegible] Louisiana 10-inch welded line, and a gathering line will be run from this point to the Bateman area which the company has purchased, and will run oil from the new producing area to Morgan Station where it will be taken over by the Standard Pipe Line Co. of Louisiana's line and transported to Baton Rouge, La.

The Houston Oil Co. is clearing location for a tank farm to be located in the northwestern part of the D. M. Peters heirs' farm in the I. Ruddle Survey on the I.&G.N. Railroad, approximately 2[illegible] miles due north of Edward W. Bateman No. 1 Crim, discovery well in the E. Sevier Survey. A loading rack will also be constructed by the company at the tank farm, and oil from the independent leases in the Bateman Pool will be shipped out from this rack, probably to Houston. The company is now seeking contracts from independent operators who are drilling in the area. Six wells are drilling or ready to spud in on surrounding leases.

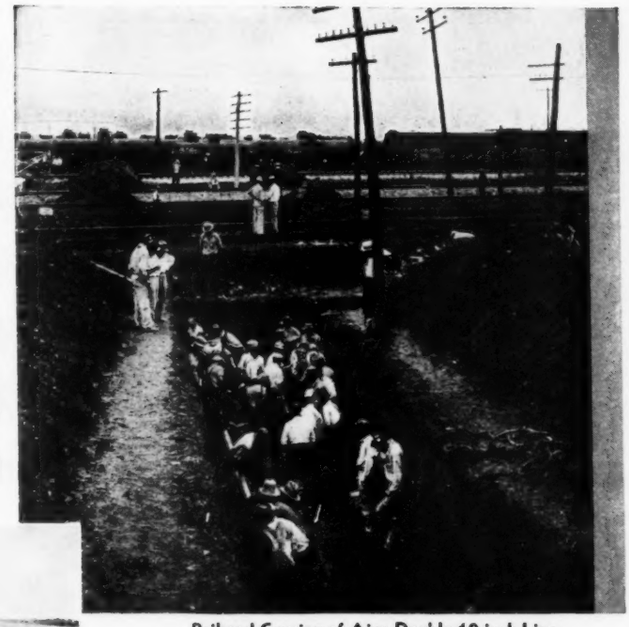
LOS ANGELES GAS EXPANSION

LOS ANGELES, Calif., Jan. 24.—Nearly $4,000,000 will be expended by the Los Angeles Gas & Electric Corp. during 1931 for additions and betterments to its gas and electric systems, according to announcement by Addison B. Day, president and general manager.

The bulk of this money will be used to provide additional gas and electric distribution facilities to meet the growing demands for service. The balance will be spent for miscellaneous additions and betterments to the corporation's properties.

The chief items on the 1931 betterment program include 20 miles of commercial gas mains, 9,500 gas services, 10,000 gas meters, 4,000 gas regulators, 8,000 electric services, 6,600 electric meters, with the necessary poles, wires and conduits, a new supervisory control electric substation of 15,000 Kva capacity and preparation for changing 16,500 volt high line to 33,000 volt lines.

THE LAYING OF THE AJAX DOUBLE 10-INCH AND THE PANHANDLE-EASTERN 22-24-INCH ... MADE PIPE LINE HISTORY IN 1930



Railroad Crossing of Ajax Double 10-inch Line at Wood River, Illinois. Twenty-nine railroads were crossed by the Ajax Line.

Ajax Double Line Crossing Missouri River. Six major rivers were crossed by this line.

The Panhandle-Eastern 22-inch Line under construction near Gruver, Texas.

Welding on the Panhandle-Eastern 22-inch Line near Gruver, Texas.

Unique in the annals of pipe line construction was the Ajax Line. Two 10-inch pipe lines were laid side-by-side in separate ditches simultaneously for a distance of 400 miles—from Jenks, Oklahoma, to Wood River, Illinois. Both lines were acetylene welded, painted and wrapped in saturated felt.

The Oklahoma Contracting Company laid the first length of pipe on June 26, 1930. Exactly five months later and *35 days before the contract specified time* the Ajax Line was completed.

Construction on the Oklahoma Contracting Company's 309-mile portion of the Panhandle-Eastern, formerly the Missouri-Kansas, Pipe Line began May 26, 1930. By September 26, 109 miles of 22-inch line had been completed, with three joints welded to one coupling. Nearing completion is the 200 miles of 24-inch coupled line.

The Oklahoma Contracting Company laid over 1,600 miles of pipe line in 1930. This record of achievement, a company policy of having all equipment on the ground the day before it is needed and of buying new equipment whenever it will speed up the job, and an efficient organization of competent executives and workmen make the Oklahoma Contracting Corporation's bid on any job the most economical, although it may not be the lowest.

OKLAHOMA CONTRACTING CORPORATION

Formerly OKLAHOMA CONTRACTING COMPANY

Pipe Line Engineers and Contractors

General Offices: Allen Building, Dallas, Texas
Branch Office: Oklahoma Gas Building, Tulsa, Okla.

Big Lake Pool's Largest Well Increases

Gauges 7,154 Bbls., Increasing Over 200 Bbls. Withdrawals From Storage in West Texas Reach New Peak During Week

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Jan. 26.—The West Texas district was cut to a daily allowable of 245,927 bbls. at the statewide proration hearing held at Austin on January 22, the district producing a comparatively small amount over that figure at the present time. This figure is based on the total daily nominations made by the purchasing and pipe line companies serving the various areas in the district. West Texas, as in the case of the Panhandle and North Central Texas districts, is bound to feel the effects of the crude purchased from the new areas in East Central Texas, and in the increase in allowable from the Van Field, for no one area can be granted an increase without some effect on other producing areas in the same state.

Group No. 1 Oil Corp.'s (Continental Oil Co.) No. 4-B University, the ninth deep well to be brought in in the Big Lake Field, also the latest and largest well in the field, has been on the increase during the week. It gauged 7,154 bbls. for the 24-hour period ending 7 a.m. January 24, with around 62,000,000 feet of gas, increasing over 200 bbls. over the previous day's output. This well was drilled in four months and a half by Lofland Brothers of Tulsa, setting a drilling record for drilling deep wells in the field. Tubing has not yet been run in the well, but special 3-inch tubing will probably be used, which is expected to cut the daily average of the field down to around 20,000 bbls. to the purchasing contract which the company has with the Regan County Purchasing Co.

Production in the Big Lake Field was touched upon at the proration meeting at Austin, January 22, but further thought will be given it in a special hearing and order which will be heard later.

Cranfill Brothers and Gulf Production Co. have overcome the long fishing and sidetracking job in their No. 1 Tubb in Section 8, Block B-27, western Crane County, and are now drilling below 4,620 feet after striking an increase in gas at 4,594 feet showing an estimated 1,600,000 feet of gas, and picking up another slight increase in oil at 4,595 feet. During the 24 hours ending 7 a.m. January 25 the well flowed 35 bbls., and during the same length of time ending 7 a.m. January 26 it flowed 38 bbls.

Withdrawals Increase

Withdrawals from storage reached a new peak this week when a daily average of 70,957 bbls. were taken from tanks in the district. The former high was slightly over 61,000 bbls., but during the last period they fell to 4,177 bbls. per day. Trunk pipe lines and local refineries were the chief factors in the heavy withdrawal, trunk lines increasing runs 50,639 bbls. per day to a total of 294,910 bbls. per day, and refinery runs increasing over 27,000 bbls. per day to 46,540 bbls. due to resumption of refinery operations in the district.

Lewis & Slagel's No. 1 Bell in Section 12, Block 30, Township 1s, T.&P. Survey, western Mitchell County, 1 mile east of Sinclair Oil & Gas Co.'s No. 1 Dodge estate, across the line in eastern Howard County, flowed 55 bbls. by heads in 24 hours ending 7 a.m. January 22 after a shot was given it from 2,593-2,820 feet. The following day it flowed by heads at the rate of 160 bbls. per day, but later fell off in production, and another shot was expected to be given it from around 2,430-2,550 feet. Total depth of the hole is 2,828 feet. This will make the third producer for the area which was opened by the Sinclair Oil & Gas Co. a few months ago, an area which has not caused much interest to the fraternity operating in West Texas, due to small size of the wells, and its possibly small producing area.

COMPLETIONS IN WEST TEXAS

Howard County

Laurel and Cosden Oil Co.'s No. 1 Dora Roberts, top pay 2,590 feet, initial production 7 bbls., total depth 2,590 feet. Laurel and Cosden Oil Co.'s No. 11 Dora Roberts, junked and abandoned, total depth 2,557 feet. J. B. Mims and others' No. 1 Koonsman, abandoned.

Hudspeth County

Lockhart and others' No. 1 Gardner and Mosley, junked and temporarily abandoned, total depth 3,140 feet.

Pecos County

Culberson Brothers' No. 2 J. H. Tippett, dry and abandoned, total depth 650 feet. Rio Grande Oil Co.'s No. 1 R. D. Webb, dry and abandoned, total depth 3,300 feet.

Scurry County

Byrd and Harmon's No. 1 J. E. Murphy, top pay 1,750 feet, pumping 20 bbls. daily, total depth 3,501 feet. Camp Springs Oil & Refining Co.'s No. 1 Strayhorn, dry and abandoned, total depth 875 feet. J. D. Mims and others' No. 1 J. J. Koonsman, abandoned.

Upton County

R. H. Gill and others' No. 1 J. H. Shirk, dry and abandoned, total depth 2,905 feet. Humble Oil & Refining Co.'s No. 1 M. L. Dameron and others, dry and abandoned, total depth 3,382 feet. Weekley Oil Corp. and others' No. 1 J. H. Shirk, dry and abandoned, total depth 2,742 feet.

Ward County

Texas Pacific Coal & Oil Co.'s No. 1 Henry Jones, top pay 2,305 feet, initial production 310 bbls., total depth 2,354 feet.

Fisher County

The Texas Company's No. 1 Teagarden, top pay 3,206-13 feet, initial production 300 bbls., total depth 3,213 feet.

Ector County Production

Figures used by the umpire in arriving at the total accumulative production of the Penn Pool, Ector County, since discovery, show the field with a total of 2,656,805 bbls., of which 1,455,534 bbls. were produced since proration was started.

Company—	No. wells	Total accumulative
Amerada-Skelly	4-A	131,381
Amerada-Skelly	4	44,517
Cosden Oil Co.	11	565,087
Gulf Production Co.	14	451,083
Humble O. & R. Co.	23	815,465
Landreth Production Co.	10	370,100
Mid-Kansas Oil & Gas Co.	1	14,531
Shell Petroleum Corp.	1	67,600
Sunray Oil Co.	1	7,930
Simms-Phillips Pet. Co.	4	132,064
The Texas Company	5	56,383
Republic-Skelly	1	672
Total	79	2,656,805

RUNS THROUGH TRUNK LINES

Company, size, location—	Bbls.
Atlantic, 10-inch, Houston	31,715
Gulf, 10-inch, Ranger	40,567
Humble, 2 and 8-inch, Comyn	20,567
Humble, 10 and 12-inch, Ingleside	48,621
Illinois, 2 and 8-inch, Del Rio	36,584
Magnolia, 8-inch, De Leon	19,452
Pasotex, 8-inch, El Paso	12,121
Shell, 10-inch, Healdton	36,755
Shell, 10-inch, Houston	25,606
Texas, 10-inch, Houston	22,979
Total	294,910

RUNS TO WEST TEXAS REFINERIES

Cosden Ref. Co., Big Spring	8,095
Big Spring Ref. Co., Big Spring	1,462
Burford Oil Co., Pecos	4,306
Col-Tex Ref. Co., Colorado	7,000
Great Western Ref. Co., Big Spring	2,792
Humble Oil & Refining Co., McCamey	21,550
Wickett Ref. Co., Wickett	265
Tonkawa Ref. Co., Pyote	1,069
Total	46,540

TANK CAR SHIPMENTS

Big Lake from Texon	3,000
Fox and Thorsen from Mertzon	75
Santa Fe from Hurdle	53
Southern Crude from Wickett	12,129
Total	15,259
Total daily distribution	356,710
Total daily production (including Lea County, New Mexico)	285,751

WEST TEXAS PRODUCTION
Week Ending January 24

County—	No. wells	Bbls.
Andrews	3	21
Crane	372	22,206
Crockett	49	1 [illegible]
Ector	76	8,667
Fisher	9	1,101
Garza	0	2
Howard-Glasscock	534	26,229
Irion	7	7
Jones	74	1,140
Loving	35	3,070
Mitchell	149	2,054
Pecos	526	95,651
Reagan	253	24,044
Runnels	4	175
Scurry	5	7
Taylor	3	135
Upton	254	3,910
Ward	51	3,246
Winkler	593	43,160
Total production this week		242,857
Total production last week		238,502
Increase		4,355

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended January 24

ANDREWS COUNTY

Company, well, farm name, section and block— | Depth and remarks

Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor., Sec. 24, School Blk. A-46 — Drlg. 3,630 ft.

Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E, Sec. 11, Blk. A-46 — Top pay 4,335 ft.; flows every 4 days; temporarily abandoned; total depth 4,454 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur. — Shut down 1,935 ft.

E. L. Chapman's No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur. — Shut down 1,302 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur. — Shut down 2,660 ft.

Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 miles S of Alpine — Shut down 1,750 ft.

COKE COUNTY

Reed, Hitchens et al's No. 1 Duncan, 1,980 ft. from S and 1,680 ft. from E of Sec. 239, Blk. 2, H.&T.C. Sur. (4,500-ft. cable test) — Location.

CONCHO COUNTY

Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock — Shut down 1,520 ft.

CRANE COUNTY

Continental Oil Co.'s No. 1-C Cowden Bros. & Co., 207 ft. from N and 2,470 ft. from W. Sec. 81, Blk. X, C.C.S.D.&R.G.N.G. Sur. — Top pay 2,353 ft.; shot 200 qts. 2,350-2,490 ft.; swabbed 90 bbls.; hole stands full of oil; total depth 2,490 ft.

Cranfill Bros. and Gulf's No. 1 J. B. Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land — Drlg. 4,517 ft.

Cranfill Bros.' No. 1 Muir, 330 ft. from N an 2,310 ft. from W, Sec. 23, Blk. B-27, Public School Land — Cleaning out; total depth 4,095 ft.

Duffey et al's No. 1 Cowden Bros. Co. (Gulf), 990 ft. S and W of C, Sec. 81, Blk. X, C.C.S.D.&R.G.N.G. Sur. — Location.

CROCKETT COUNTY

Dieringer et al's No. 1 Banscorew estate, 50 ft. from N and 1,213 ft. from E of NW of Sec. 27, Blk. HH, G.C.&S.F. Sur. — Shut down 2,505 ft.

Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. — Spudded and shut down.

Magnolia Pet. Co.'s No. 2 Hoover, 2,310 ft. from S and 335 ft. from E of Sec. 2, Blk. FF, B.&B. Sur. — Swabbing and bailing 6 bbls. oil per day; total depth 2,056 ft.; shut down for storage.

Taylor-Link Oil Co.'s No. 1 Mary Bullock et al, 330 ft. from N and E of Sec. 41, T.C. Sur. — Shut down 2,300 ft.

CULBERSON COUNTY

Cranfill Bros. and Sholts' No. 1 Seay, 2,310 ft. from S and W, Sec. 45, Blk. 60, Public School Land — Set 10-in. casing 245 ft.

Grisham & Hunter's No. 2 Garren, 2,475 ft. from S and 1,566 ft. from E, Sec. 20, Blk. 89, Public School Land — Shut down 1,520 ft.; show oil 1,400-15 ft.

Kornrumpf et al's No. 1 Garren, 330 ft. S and W, Sec. 15, Blk. 79, Public School Land — Shut down 1,180 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW, Sec. 46, Blk. M, E.L.&R.R. Sur. — Spudded 20 ft. and shut down.

ECTOR COUNTY

Galt, Brown & Penn's No. 1 Cowden, C SE Sec. 12, Blk. 44, Twp. 2s, T.&P. Sur. — Rig.

H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW, Sec. 16, Blk. 46, Twp. 3s, G. M. M.Br.&A. Sur. — Shut down 3,280 ft.

Skelly Oil Co. and Republic Prod. Co.'s No. 1 McKenzie, 990 ft. from S line and 330 ft. from E line of Sec. 28, Blk. 45, Twp. 2s, T.&P. Sur. — Shut down 3,750 ft.; flowed 110 bbls. on July 12; shut in for storage.

Southern Crude Oil Pur. Co.'s No. 2 Cowder & Co., 660 ft. from S and W of NE cor., Sec. 34, Blk. 43, Twp. 1n, T.P. Sur. — Shut down 1,875 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 2,110 ft. from SW and NW of Sec. 46, J. M. Day Sur. — Shut down 3,089 ft.

Tri-State Oil Co.'s No. 1 Bobadella, 330 ft. from S and E of Sur. No. 254, S.F. No. 7,247 — Spudding 72 ft.

FISHER COUNTY

Condor Pet. Co.'s No. 1 Wilson, 330 ft. from N and 1,200 ft. from W, Sec. 6, W. E. Richardson Sur. — Drlg. 3,115 ft.

Cranfill & Reynolds' No. 2 Flannigan, 330 ft. from S and E of W half Sec. 200, B.B.B.&C. Sur. — Temp. aband.; total depth 3,130 ft.

Cranfill & Reynolds' No. 3 Willingham, 330 ft. from S and E of Sec. 307, B.B.B.&C. Sur. — Shut down 3,090 ft.

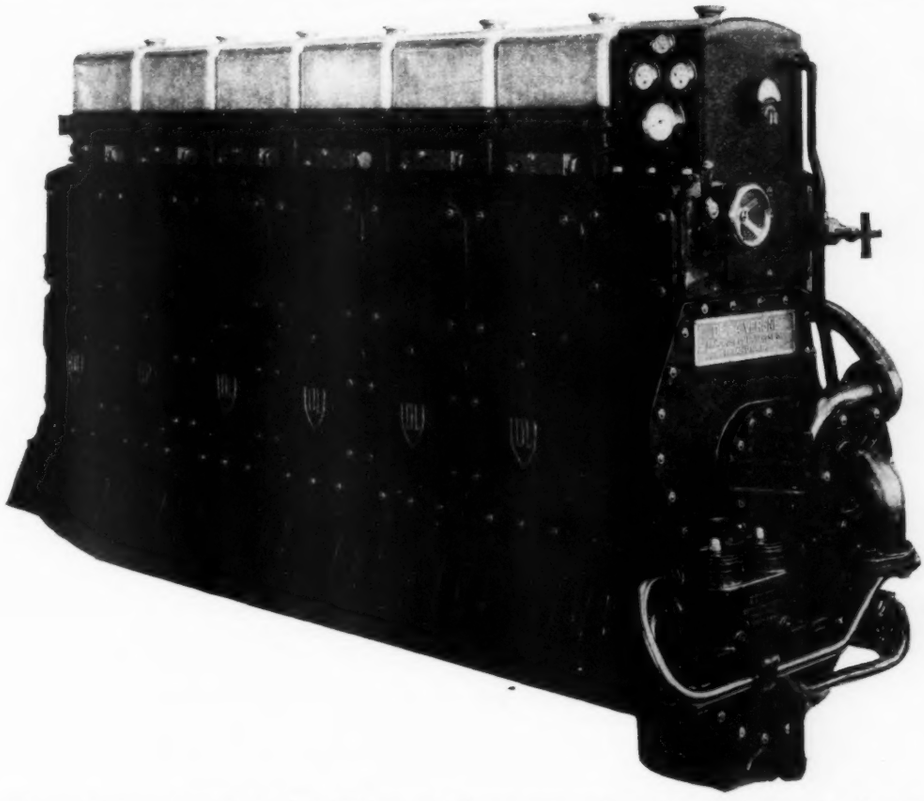
Roeser & Pendleton's No. 1 Littleton, 1,600 ft. from S and 660 ft. from W of SE. Sec. 191, B.B.B.&C. Sur. — Drlg. 2,480 ft.

Roeser & Pendleton's No. 1 Gribble (Russell), 660 ft. from S and 440 ft. from W of NW Sec. 210, B.B.B. &C. Sur. — Drlg. 300 ft.

The Texas Company's No. 2-A Stephens, 330 ft. from S and E, Sec. 79, Blk. 1, H.&T.C. Sur. — Tubing to test; total depth 3,261 ft.

(Continued on Page 171)

THE NEW DE LA VERGNE HIGH SPEED DIESEL



The engine is designed for 750 revolutions per minute with all the characteristics necessary to make such high speed conservative and reliable.

It can be adapted to any kind of service. Bedplates, power-takeoffs, reverse gears, flywheels, clutches, radiator cooling can be provided as required.

The engine can be run at any speed from 300 R.P.M. up to the rated speed of 750 R.P.M.

Every successful advance in high speed engine construction is incorporated. The engine is built in three to eight cylinder units.

I. P. Morris & De La Vergne, Inc.

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De La Vergne has been building 4 Cycle Solid Injection Engines since 1893.

Member Diesel Engine Manufacturer's Association

Significance of New Specifications

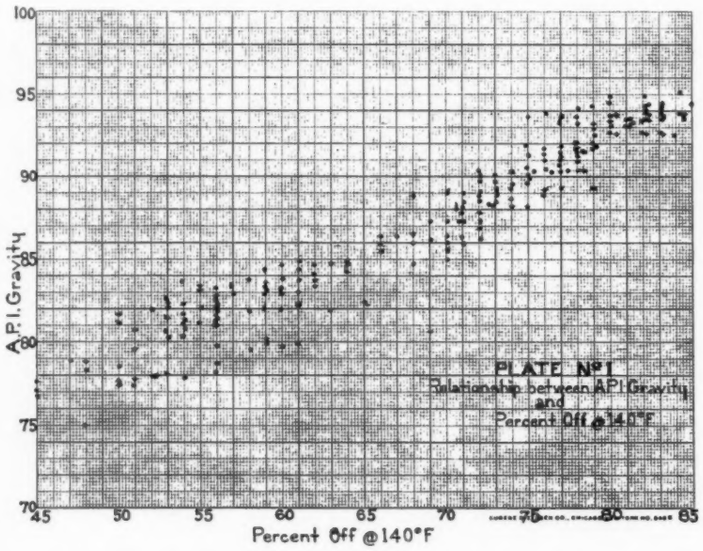
With New Grades of Natural Gasoline Refiners Can Readily Blend to Meet Any Requirements for Motor Fuels

By S. S. Smith
Shell Petroleum Corp.

The new natural gasoline specifications adopted by the Natural Gasoline Association of America during the first part of December, 1930, were published in the December 25 issue of The Oil and Gas Journal. The data released by the association gave rough comparisons between the old grade "AA," "BB," "A," "B" and "C" with the new grades and showed that, roughly, the purchaser of gasoline who had previously been buying "AA" could reasonably expect to get approximately the same gasoline under the new specifications if he bought 26-70. A great many purchasers of natural gasoline use natural for the purpose of controlling vapor pressure, or volatility, or both of their finished fuels. Many other blenders use natural gasoline solely for the purpose of controlling gravity of finished blends. The researches and the general progress of the industry during the past year or so have tended to minimize the importance of gravity and to emphasize the importance of volatility of finished motor fuels. The new natural gasoline specifications naturally attempt to reflect the latest developments of the motor fuel industry and to best fit those developments. However, it is thoroughly recognized that there is, in many instances, a desire to know in advance the gravity of a purchased natural gasoline. The purpose of this article is to present facts obtained in the general research leading to the new specifications in an effort to aid those users of natural gasoline who desire to relate the new specifications to terms of gravity.

Purchasers of natural gasoline under the old specifications received products which had gravities between definite points. Excess gravity under these old specifications was excuse for rejection of gasoline. Therefore, the refiner knew at all times that his gravity could not exceed a particular figure on a particular grade. Under the new specifications it is recognized that the most important single characteristic of natural gasoline is vapor pressure, and, therefore, excess vapor pressure is one of the unpermitted qualities of purchased gasoline of a given grade. The per cent evaporated at 140°, under standard distillation procedure, is the second specification for the gasoline and the qualifying specification is the minimum amount evaporated at 140°. For instance, under the 26-70 grade, the qualifications necessary in the gasoline purchased are that the vapor pressure shall not exceed 26 pounds and the per cent evaporated at 140° shall not be less than 70 per cent. If, however, we attempt to tie these definite limits of vapor pressure and volatility into definite limits of gravity, we find the extreme divergence possible in particular grades somewhat wider than the old grades. Therefore, to make comparison between the old and the new specifications it is necessary to assume that the specifications of products delivered will in most cases fall at or near the specification limits just as they did under the old scheme of grading. In other words, the purchaser of "AA" gasoline under the old specification nearly always received gasoline which crowded the 87.9 gravity specification and also crowded downward toward the 90 recovery point.

Similarly, it is reasonable to expect that purchasers of gasoline under the new grading system will receive gasoline which crowds the upper limit of vapor pressure within the particular grade and show tendency to approach the lower limit of volatility at 140° within the particular grade. This last statement may, of course, be subject to question, but if it is remembered that the grades of gasoline sold by natural gasoline manufacturers will in large percentage of cases be arrived at by exact fractionation to the vapor pressure limit, it is then reasonable to suppose that most manufacturers will make the grade of vapor pressure which will let them obtain the highest volatility rating at a particular vapor pressure and in so doing will crowd the lower limit of the volatility rating.



Per Cent at 140° F.

If these assumptions are taken as sound, then the attached curves of gravity plotted against per cent evaporated at 140° are illuminating as to what can be expected in the purchase of 55 or 70 per cent evaporated at 140° gasoline. These data points are arrived at by inspection of a large number of Mid-Continent gasolines, Plate 1 showing gasolines just as they are shipped from natural gasoline plants in the Mid-Continent Field and Plate 2 showing gaslines prepared by fractionation from normal Mid-Continent gasolines to fall in all the vapor pressure grades. It is interesting to note from Plate 1 that the gasolines which fall at 70 per cent off at 140°, exactly, range in gravity from 85 to 89 or, roughly, within the limitations of the old "AA" grade. When such gasolines are controlled to 26-pound vapor pressure by fractionation they will fall close to 70 per cent at 140° and the gravity range will be limited to perhaps 2° up or down from 86 gravity. Plate 3 illustrates this point. It shows the A. S. T. M. distillation recovery as ordinates against the Reid vapor pressures at 100° as abscissae on the same gasolines shown in Plate 2. The legend of these individual points shows crosses denoting the distillation points and Reid vapor pressures of gasolines having in excess of the 88° A.P.I. gravity while the points denoted as circles show gasolines of lower than 88 gravity.

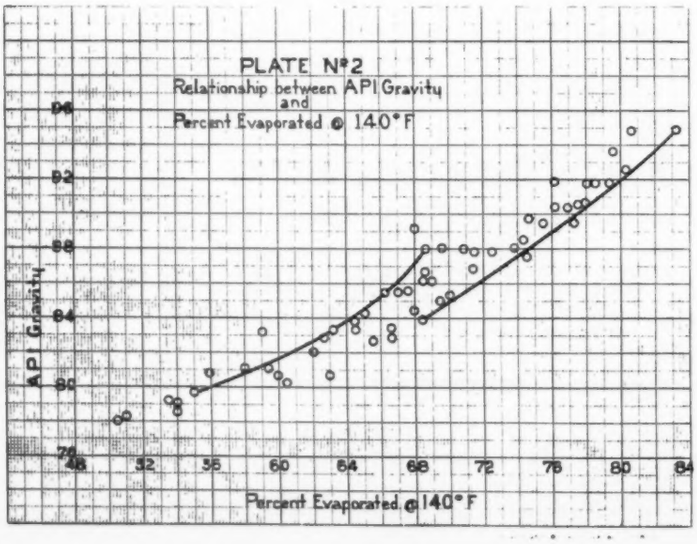
It will be noted that only one gasoline below 26-pound vapor pressure has a gravity in excess of 88° and this particular gasoline happens to have a gravity of 88.2. This, in general, shows the relationship which is attempted to prove, viz., that 26-pound gasoline of 70 per cent at 140° will not have gravity in excess of 88° A.P.I. It will immediately be recognized that all of the foregoing data ties up the new grade, 26-70, to the old grade "AA" and more or less ignores the importance of the other grades.

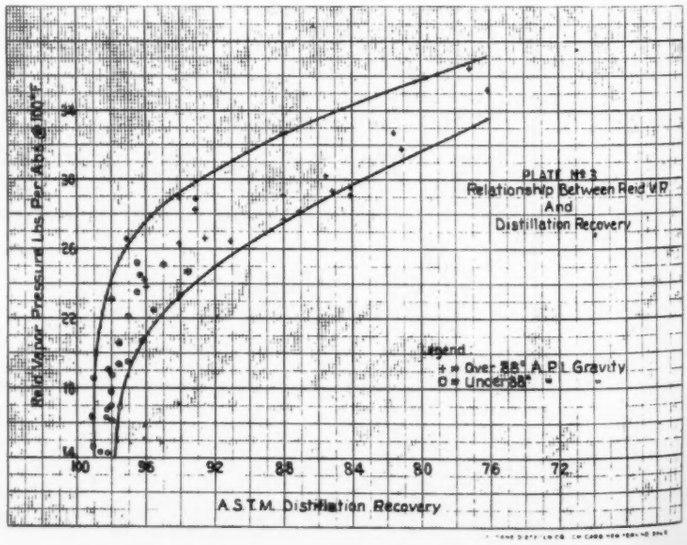
Manufacturers Handicapped

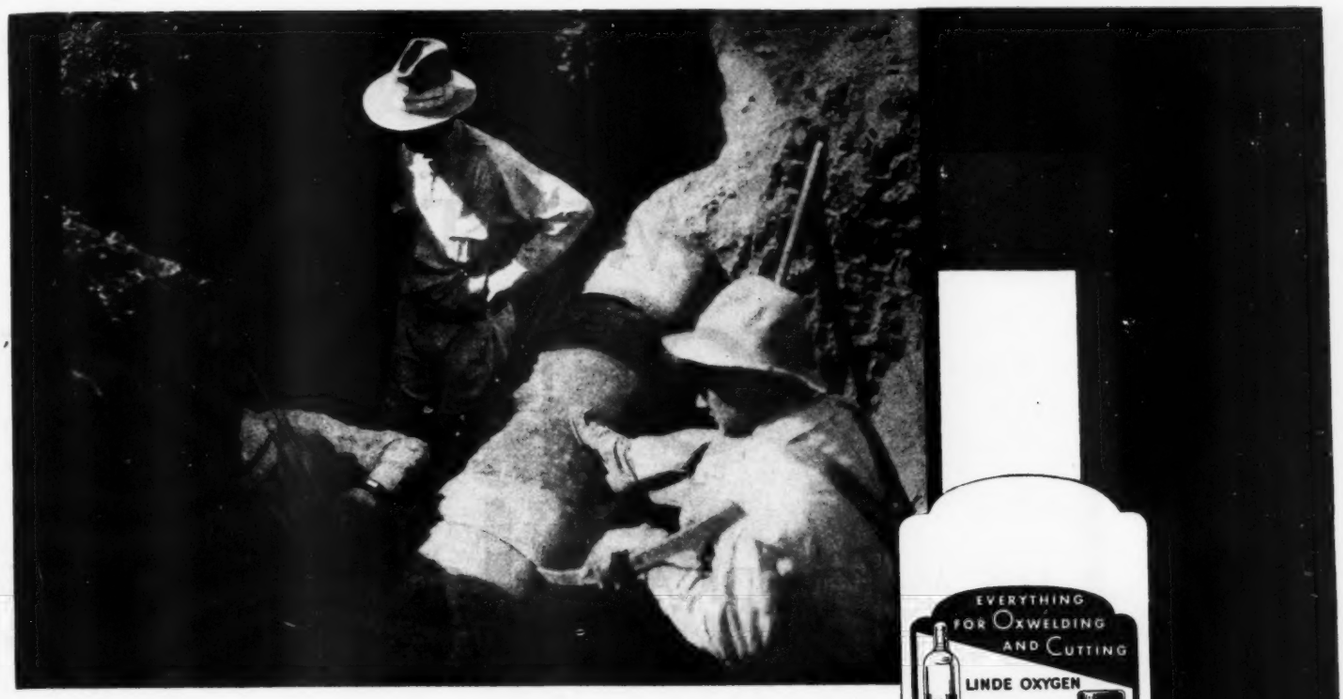
There is a general feeling in the natural gasoline industry that it has been somewhat handicapped in its sales efforts by the fact that effectively the industry had only one recognized grade for sale, that of "AA." To those purchasers of natural gasoline who consider natural gasoline as something to be used sparingly and in as little volume as possible, this gives sufficient data to enable the purchase of 26-70 replacably with their old grade of "AA." It is the hope of the natural gasoline industry, however, that many refiners who have recognized the necessity for controlled vapor pressure will immediately see the new grades as an opportunity to purchase natural gasolines of specific quality for specific uses and thereby increase the field of usefulness of natural gasoline as well as broaden its demand to the makers of special aviation fuels, high volatile motor fuels and so-called high test gasolines.

Refiners who now control their vola-

(Continued on Page 166)







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Washtenaw County, Michigan, Gets Play

Purely Wildcat Ventures Near Line of Monroe County Attracting Attention. Vanderburg County, Indiana, Active

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Jan. 26.—One of the interesting developments is the purely wildcat ventures being made by the Monroe Oil & Gas Co., or Alfred Violet on the Sanderson farm, N half N half NW, Section 26, Augusta Township, Washtenaw County, Michigan, near the division line of Washtenaw and Monroe Counties, and close to 35 miles north and a little west of Toledo, Ohio, and about a mile northeast of the small hamlet of Oakville, which is along the Toledo-Ann Arbor Highway. This well started drilling along in April of the past year and has experienced every known fishing job that a driller could think of. This well topped the Trenton limestone formation at 2,545 feet, and reached a depth of 155 feet in the Trenton, to a total depth of 2,700 feet, when the tools were lost in the hole again and are still there. It required a long and tedious job to fish out the hemp cable. Early in the week the drill had gone into the dark pebble part of the Trenton for only a short distance when some gas showed up and a good smell of oil. The crew ran the bailer several times and every time brought up a little water, the rest oil, and all indications point to a commercial producer, if the tools can be brought out and drilled deeper. The well is close to 20 miles away from any known oil well, the closest being the wells drilled west of Dundee, in Monroe County. When Harry West, well known driller, took over the job of bringing in the well, he had but little trouble, as he has worked in the deep fields of Oklahoma, Central Ohio, Texas, Kansas, and his helper, Robert Earle, has stayed by the job from the start and is still on the ground. Violet, the well owner, was all smiles when the oil showed up. The same company will soon start to complete No. 1 on the Nightingale farm, SW. Section 15, London Township, Monroe County, and about 4 miles southwest of the well on the Sanderson farm, which was held up until the Sanderson well was completed, and will also keep working on the test of the same company on the Atchinson farm, Section 30, Ypsilanti Township, Washtenaw County.

CENTRAL OHIO

Central Ohio shows but 17 completions, with 5 producers with an initial production of 48 bbls., 6 dry holes and 6 gas wells, while in new work there were but 2 locations made and 5 wells started spudding, a total of 7.

In Ashland County, Lake Township, Robinson and others' No. 3 Barbara Easley, Section 9, is reported at 4 bbls. initial from 602-65 feet. Gold Crown Oil & Gas Co.'s No. 5 Harry Horn, Section 21, same township, is 6 bbls. initial. Kemrow Co.'s No. 2 Willard S. Wiley, Section 1, Montgomery Township, is a fair gas well from 2,723-32 feet.

In Medina County, Chatham Township, Edson and others' No. 12 George W. Packard farm, Lot 3, pumped 7 bbls. from 309-56 feet. Same company's No. 11 Archie Packard, Lot 6, pumped 6 bbls. initial from 305-53 feet.

In Loraine County, Carlisle Township, the Ohio Fuel Gas Co. has a gas well in No. 1-5,360 Joseph Vencezel farm, Lot 5. Dillon & McFrederick are drilling No. 1 E. N. Gilpin farm, Lot 72, Columbia Township.

In Knox County, Brown Township, the Upham Gas Co. has a dry hole in No. 3 George Shira, Section 9, at from 2,763-73 feet.

In Summitt County, Lyons and others abandoned No. 1 Seibert-McKnight farm, Section 25, Franklin Township. In Greene Township, Stolz Oil & Gas Co. has a gas well in No. 3 O. H. Greenho farm, Section 7, at from 4,009-27 feet.

In Licking County, Fallsburg Township, Hope Construction & Refining Co. has a light gas well in a second test on the John W. Martin farm, Section 13, from 2,936-88 feet, also a showing of oil. Pure Oil Co. has a location made for No. 8 H. C. Priest farm, Section 7, Hanover Township. Armbruster and Stricker's No. 7 on the William Stricker farm, Section 23, Mary Ann Township, is at from 795-804 feet. No. 8, same farm, is drilling.

In Muskingum County, Wittmer Oil & Gas Co.'s No. 1 G. F. Heagen, Section 15, Perry Township, is reported dry at 4,015 feet. Ohio Fuel Gas Co.'s No. 1-5,519 Harley Leasure farm, Sections 12-19, same township, is also dry at 4,098 feet.

In Athens County, York Township, Wittmer Oil & Gas Co. has a dry hole in No. 2 Baird Brothers farm, Section 23, at 3,380 feet. Mosure and others are drilling No. 3 Lena L. Bean, Section 18, Cannan Township. Standard Natural Gas Co. got a fair gas well in No. 1 on the J. M. Pickett farm, Waterloo Township, at from 1,005-13 feet.

In Stark County, East Ohio Gas Co. has a gas well on the H. S. Belden, Jr., farm, Section 24, Jackson Township, at a total depth of 4,457 feet.

In Belmont County, Somerset Township, W. C. McBride, Inc.'s No. 5 Bement-Howell, is a light gas well at 1,419 feet.

LIMA FIELD

Outside of the development work being done in Hardin County, very little is being accomplished in any area of the old Lima Field of northwestern Ohio. Only two completions were reported from the Kenton Field of Hardin County, both being small gas wells in Buck Township. One is the Aetna Life Insurance Co.'s No. 1 Anna E. Morrow farm, Section 22, and the other the Doherty Oil & Gas Co.'s No. 1 on the M. F. Timmons farm, Section 29, same township.

Jones & Coyle's No. 1 on the Jessie Chilcote farm, Section 17, Tymochtee Township, Wyandot County, is showing for a fair gas producer from the Trenton from 1,346-1,460 feet. Same parties are starting a test on the Byron E. Powell farm, Section 8, same township, and Murphy and others are drilling No. 1 F. E. Chamberlain farm, Section 5, same township.

Reports are that a number of tests will be drilled west of Toledo, near Monclova and Silica, in Monclova and Springfield Townships, of Lucas County. Two wells are already drilling, being No. 1 by the Interior Oil & Gas Co., of Ohio, on the E. J. Keil 100 acres, Section 28, Monclova Township, and in Springfield Township, same county, R. B. Weed and others are drilling No. 1 Emmett Holloway farm, Section 29.

INDIANA

Vanderburg County, in the extreme southwestern part of Indiana, now has the oil and gas fever as wells of both kinds have been found in the county, and indications are for the drilling of numerous tests. The latest completion there was the Vanderburg Oil Corp.'s test in the SW SE, Section 32, Center Township, which was reported good for 7 bbls. initial from 915-20 feet, and this company is now drilling on the Poor farm, in the SW SE, Section 32, same township, and should it prove a commercial producer of either oil or gas, things will hum.

In Pike County, Washington Township, the Wiser Oil Co.'s No. 1 in the northeast corner of the Charles H. Carlisle farm, SW, Section 23, was a dry hole. The contractor was A. E. Davis. H. H. Risher is drilling on the R. G. Salyard farm, SE NE, Section 30, same township.

Thomas & Ellis, of Owensboro, Ky., drilled in a fair gas well in a second test 300 feet from the north line and 600 feet from the east line of the Alva Martz farm, Section 32, Curry Township, Sullivan County, at 536 feet deep.

Hagedorn & Schlacter are drilling No. 1 in the southeast corner of the John Heubschman farm, SE, Section 35, Huff Township, Spencer County. Steffy & Grass are drilling No. 1 Gus Sauter, Section 2, same township. Liggett & Melon are drilling No. 1 William F. Grass farm, Section 2, same township.

Indiana Oil and Gas News

Compiled by Paul F. Simpson, state gas supervisor, department of conservation, division of geology, Indianapolis, Ind., by counties:

Allen County—No. 1 Carl Rekeweg, near Woodburn, in Maumee Township, was completed a small gas well at 1,469 feet. Initial capacity was about 15,000 feet.

Blackford County—Walter Todd and others are drilling No. 1 John Glancy in Section 22, Washington Township.

Daviess County—Williams and others' test near Montgomery is shut down at 699 feet, after having passed through a good oil showing.

Gibson County—The Murphy Oil Co. abandoned No. 17 Alice Fredericks in Section 6, Washington Township. The L. W. Gudgell test is drilling at 3,952 feet, in Section 25, Columbia Township. It is being drilled by the Indiana Southwestern Gas Co. Same company abandoned No. 1 Riley, Section 10, Barton Township, at 1,610 feet.

Huntington County—The initial production of No. 1 Charles A. Wiley, drilled in Section 18, Salamonia Township, by the Salmo Oil Corp., was reported at 100 bbls.

Jay County—A 40-bbl. well was reported on the C. C. Harris lease in Section 16, 2 miles north of Pennville, in Penn Township. R. D. Hance has started No. 1 Henry Ohler in Section 22, Madison Township.

Knox County—An important test was completed by the Gardner Petroleum Co., on the Mary E. Bond lease in the SE NW, Section 15, Busseron Township. A sand at 705-14 feet produced 3,000,000 feet of gas, and three other gas showings were encountered. Other tests will be started soon. Wells and Joyes test on the Elizabeth Roach farm in Donation 211, same township, was abandoned at 1,625 feet.

Perry County—Conyers, Roetzel and Bugg have made a new location in their small gas field near Bristow. Glenn & Dice have abandoned their No. 1 Tom Kellams in Section 3, Tobin Township, after striking salt water in the Cunningham. Hagedorn and Schlacter abandoned their No. 1 Reichardt, north of Troy.

Pike County—The Ohio Oil Co. abandoned No. 6 Mose Skinner in Section 23, and No. 6 M. D. Mason in Section 35, Monroe Township, and Nos. 6 and 7 J. C. Brady in Section 30, Madison Township. The Wiser Oil Co. has started No. 1 Charles H. Carlisle in Section 23, Washington Township. The Mahutska Oil Co. abandoned No. 1 Joseph A. Davidson, in Section 20, Clay Township, at 1,655 feet. In Section 30, Patoka Township, No. 1 N. H. and R. M. Fork has been started by V. E. Bolyard and others. Same parties abandoned the No. 1 Patoka Coal Co. in Section 25. James H. Young is starting a well on the Sarah

(Continued on Page 227)

ONLY 11 COMPLETIONS REPORTED DURING WEEK IN KENTUCKY FIELDS

By George A. Whitney

OWENSBORO, Ky., Jan. 26.—Only 11 wells were reported for the week in the Kentucky fields, there being none reported from the Legrande Field in Hart County, where the greatest activity is shown.

One of the interesting gas developments since the last review is the Jordon & Curtis test on the Crofton Negro School lot, in Christian County, that is reported good for 1,500,000 feet, from a shallow depth of 630 feet, bringing to light another gas pool where least expected.

In the Monticalle Field of Wayne County, District 3, the Pigeon Rock Oil Co.'s No. 16 on the Stearns Lumber Co. tract produced 4 bbls. when put on the pump. In District 8, in Estill County, E. S. Caywood and others found a dry hole on the Stewart farm.

A 25-bbl. producer is reported completed by the Distill-Martin Gas Co., in No. 1 on the Ennis farm, 8 miles south of Barboursville, in Knox County, at a depth of 800 feet, while drilling for gas.

R. G. Gillespie, well known operator, is reported down to 1,600 feet in No. 21 on the Sam Blanton 125 acres, District 30, Johnson-Magoffin Counties, and will be a deep test.

In Hancock County, a part of the Tri-County Field, in the western Kentucky area, James C. Ellis' No. 4 well, 15 feet from the north line and 600 feet from the south line of the Lincoln Richards 568-acre farm, in the Pellville Field, is reported good for 50 bbls. Tri-County Oil Co.'s No. 1 well, 500 feet from the east line and 1,000 feet from the west line of the Lee Rosenblott farm, same field, is reported at 3 bbls. on the pump. Whitmer and Snyder are drilling No. 3 on the Alvie Colley farm, same field.

Hupp & Duff made a deep test of No. 1 on the W. Bender farm, in the Liva area of Daviess County, getting a dry hole at a depth of 1,650 feet, in what is supposed to be the McCloskey sand, the same formation in which a big well was found years ago on the McCloskey farm, in Lawrence County, Illinois.

In Ohio County three wells were all that were reported completed, two being dry and the other a fair sized well. The gas well which is said to show a volume of 750,000 feet, was drilled by J. R. Pointer and others and is No. 3 on the J. H. Lyons farm. Petroleum Exploration Co. reports a dry hole in No. 1 on the S. E. Edge farm, at 800 feet, and Jenkins and others' No. 2 M. Hanner farm, was dry in the Barlow sand at 700 feet. Dr. Denton is reported drilling a well for gas on his lot in the hamlet of Fordsville, same county.

In the Tri-County Field of Ohio-Daviess-Hancock Counties only necessary drilling is being done to conform with lease conditions as the shut-down which started a year ago still prevails, although there is some talk of starting up as soon as weather conditions are favorable this spring. Many drilling outfits are still standing over completed wells in the three counties, and many strings were moved into Hart County, where work has also slacked down on account of scarcity of storage facilities.

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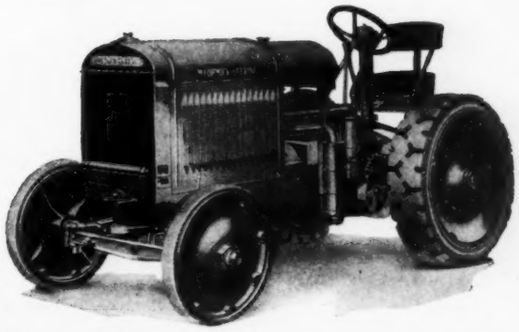
At left: McCormick-Deering Model 30 Industrial Tractor. *At right:* The McCormick-Deering Model 20, companion to the husky Model 30.



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Industrial Machy. Co., Kansas City, Mo.
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Option Equipment & Supply Co., Pittsburgh, Pa.
Resistcor Engineering Corp., Tulsa, Okla.

Manufacturers of Oil Field Equipment Powered by McCormick-Deering:

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Keystone Driller Co., Joplin, Mo.
Resistcor Engineering Corp., Muskogee, Okla.
W-K-M Company, Inc., Houston, Texas
Ross-Meehan Foundries, Chattanooga, Tenn.
The Shaffer Specialty Co., Tulsa, Okla.
The Star Drilling Machine Co., Akron, Ohio
Trackson Co., Milwaukee, Wis.
Willamette-Ersted Mfg. Co., Portland, Ore.

The McCormick-Deering Power Unit is available as independent power plant; as an integral part of high-quality equipment, or as replacement for other forms of power. Two sizes: Model 200, 25 h.p., and Model 300, 40 h.p.

McCORMICK-DEERING
INDUSTRIAL POWER

As They Faced the Journal's Cameras in Different Fields

1—M. W. Mathun, tool pusher; W. P. Mercer, driller; Rex Smith, tool dresser; and Frank Wade, driller; Skelly Oil Co., Oklahoma City, Okla. 2—R. R. Catchpole, D. and M. Machine Co.; L. E. Wiggins, Republic Supply; R. J. Dunlay, Alco Oil Tool; and L. J. Laird, Republic Supply, Kettleman Hills, Calif. 3—A. F. Nixon, vice president, Happy Belting Co., Fort Worth, Tex. 4—Left to right: J. G. Osgood, traffic manager; J. H. Pohl, clerk; J. A. Oaks, superintendent; J. G. Gant, chief chemist; Ben Anderson, clerk; B. M. Wood, electrician; L. C. Lafferty, still helper; J. F. Warren, stillman; William Hollis, loader foreman; P. G. Kirkpatrick, still helper; M. P. Moore, stillman; Joe Hall, assistant chemist; W. M. Moore, treater; and M. A. Jewell, loader helper; Wilcox Refinery, Pampa, Tex.

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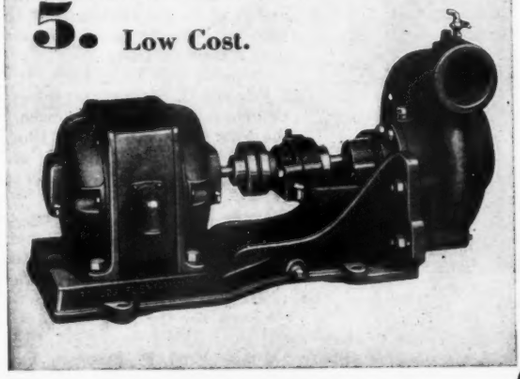

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DEPENDABILITY plus quick replacement service! This is of primary importance to every industrial pump user—particularly those plants in which operation depends upon pumping. With the new Goulds Flexi-Unit motor-driven centrifugals, the necessity of waiting for factory shipments is eliminated. Parts can be obtained from your mill supply dealer or the nearest Goulds warehouse.

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Personal Paragraphs About Oil Men

T. C. Skeen, of the Columbian Steel Tank Company, Kansas City, Mo., has been in Tulsa on business.

* * *

Jule Axelson, of Axelson Manufacturing, Ltd., stopped off in Tulsa en route to eastern points where he is calling on the distributors.

* * *

Fred O. Jackson, of Shawnee, Okla., of the land department of the Phillips Petroleum Company, was transferred to the Oklahoma City district.

* * *

Harold D. Crawford, sales manager for the Parkersburg Rig & Reel Company, Parkersburg, W. Va., is on a business trip in the Mid-Continent area.

* * *

C. W. Anderson, sales manager for the Deer Oil Corporation, is spending several weeks in the Tulsa offices of the White Oak Corporation, the parent company.

* * *

Robert W. Stewart, former chairman of the board of directors of the Standard Oil Company of Indiana, at Chicago, has resigned as a director of the National City Bank of New York.

* * *

G. C. Gester, chief geologist of Standard Oil Company of California, has been visiting in the Mid-Continent fields. Mr. Gester is past president of the American Association of Petroleum Geologists.

* * *

W. H. Gannon, assistant superintendent, Anderson-Prichard refinery at Cyril, Okla., has resigned to accept a position with the Russian government. Mr. and Mrs. Gannon sailed December 4 from New York.

* * *

R. L. Dunsmore, former superintendent of the Talara, Peru, refinery of International Petroleum Company, has been appointed superintendent of the company's refinery at Imperoyal, Nova Scotia, succeeding David M. Allan, retired.

* * *

Albert Gibson has returned to Petrolia, Ontario, from India, making the trip via San Francisco, Calif. He will spend a few months in Canada, returning to India next summer. He has spent the past 20 years drilling in the India fields.

* * *

C. L. Madden, production superintendent of the Magnolia Petroleum Company, Wewoka, Okla., has been promoted to assistant general production superintendent under J. Kilchenstein, and has been transferred to the company's general offices at Dallas, Tex.

* * *

Claude B. Woods, independent oil operator at Wichita Falls, Tex., was made vice commander-in-chief of the Trans-Mississippi department of the Sons of Confederate Veterans. The appointment was conferred by Charles R. Norman, of Richmond, Va., commander-in-chief.

* * *

Ronald Ransom, oil scout for Skelly Oil Company in the Seminole-Shawnee district of Oklahoma, was transferred to the McPherson County, Kansas, area, with headquarters at Wichita. W. A. McArthurs, who has been covering the Cushing-Enid district, in Oklahoma, succeeds Mr. Ransom.

* * *

Delmar Harman, of Midwest, Wyo., is leaving his position there with the Midwest Refining Company to become superintendent of gasoline plants for the Stanolind Oil & Gas Company at Tulsa. Men who have been associated with him during the past 10 years presented him with a very handsome watch as a farewell token.

* * *

Jack Flett, who has been under contract with a British oil company in Burma since 1916, arrived recently in Petrolia, Ontario, for a short holiday, prior to leaving for an extended visit in Scotland. Mrs. Flett and two children accompanied him. The party came home by the Pacific route and will return to Burma later in the year by the Atlantic and the Suez Canal, thus making a circle of the globe.

A. H. Richardson, of Omaha, Neb., president of the Standard Oil Company of Nebraska, has been elected a director of the Omaha and Council Bluffs Street Railway Company.

* * *

William Schwemlein, chief engineer, for the Parkersburg Rig & Reel Company, Parkersburg, W. Va., is in Tulsa consulting with the field engineers of his organization on engineering problems.

* * *

Paul Truesdell, publicity director for the Universal Oil Products Company, is spending several weeks in the Mid-Continent refining area and visiting the offices of the companies in Tulsa.

* * *

Mack M. Spears, construction superintendent for the Gulf Refining Company in the Maracaibo, Venezuela, district, is back in the United States for a few days. He arrived at the family home in Mansfield, DeSoto Parish, Louisiana, via plane. He came to attend the funeral of Mrs. Spears who died in a Mansfield hospital a few days before his arrival.

Men of the Industry

A. R. Wilson

A. R. Wilson, vice president of the Texas Production Company, the Rocky Mountain producing subsidiary of The Texas Company, has had a wide business experience, although since leaving college he has been in the employ of only three companies. First, he was with Armour & Company for a short time, next with the Southern Pacific Railroad in Houston, Tex., for four years and since then he has been with The Texas Company in various capacities.

Mr. Wilson was born in San Antonio, Tex., attended the Southwestern University, Georgetown, Tex., and in 1917 in Gatesville, Tex., married Miss Hazel Strawn. He left the railroad business to go with The Texas Company in 1916. For several years he was traveling auditor and then was switched to the producing department. He went to Colorado in 1922 and was first with the Texas Production Company as assistant secretary and assistant treasurer. In February, 1929, he was promoted to assistant manager and in August of that year was made general manager. This was followed in October by election to the office of vice president. In addition to being vice president and general manager of the Texas Production Company, Mr. Wilson also is manager of the producing division of The Texas Company of Canada, Ltd., which is conducting operations in western Canada. His headquarters are in Denver, Colo., where he resides.

George B. Morris, president of the Bradford Motor Works, was in Tulsa the past week on a business trip.

* * *

Ted Hamilton, Oklahoma oil man, is making a survey of the possibilities of the new gas field in South Central New York and northern Pennsylvania.

* * *

E. B. McFarlin, former vice president of the McMan Oil & Gas Company, Tulsa, was a business visitor in Wichita Falls and Fort Worth, Tex., recently.

* * *

E. L. Jones, Jr., district geologist for the Shell Petroleum Corporation, San Angelo, Tex., has gone to Salt Lake City, Utah, to attend the funeral of his mother who passed away January 14.

* * *

John Hoffer, who for the past 11 years has been a deputy supervisor of the oil and gas division of the Railroad Commission of Texas with headquarters at San Angelo, has resigned.

* * *

W. R. Cummings, district engineer, with the United States Geological Survey located at Shawnee, Okla., has returned from Sistersville, W. Va., where his mother passed away recently.

* * *

Bob Mitchell, geologist for the Midwest Exploration Company at Midland, Tex., has been transferred to Amarillo, Tex., with the taking over of that company by the Stanolind Oil & Gas Company.

* * *

Dr. E. H. Wells, geologist, has been made state geologist of New Mexico, succeeding C. G. Staley, resigned to become state proration umpire. Doctor Wells was formerly president of the New Mexico School of Mines.

* * *

Harry F. Sinclair, chairman of the board of Sinclair Consolidated Oil Corporation; Daniel T. Pierce, assistant to the chairman of the board; and C. E. Crawley, vice president, are visiting the Mid-Continent offices in Tulsa.

* * *

Edward G. Seubert, president of the Standard Oil Company of Indiana, has been elected a director of the First National Bank of Chicago. President Traylor of the bank is a director of the Standard of Indiana, one of the two outside members.

* * *

Clyde S. Sanders, formerly in the producing department of the Midwest Refining Company at Salt Creek, Wyo., has been promoted to be assistant general superintendent of production with headquarters at Hobbs, N. Mex. Mr. Sanders has been with this company for the past 12 years.

* * *

Judge Fred F. Freeman has retired as general western manager and vice president of the Texas Production Company after having been with the company since its organization 28 years ago with the exception of two years when he was with the Elk Basin Company. A. R. Wilson succeeds Judge Freeman as vice president of the Texas Production Company.

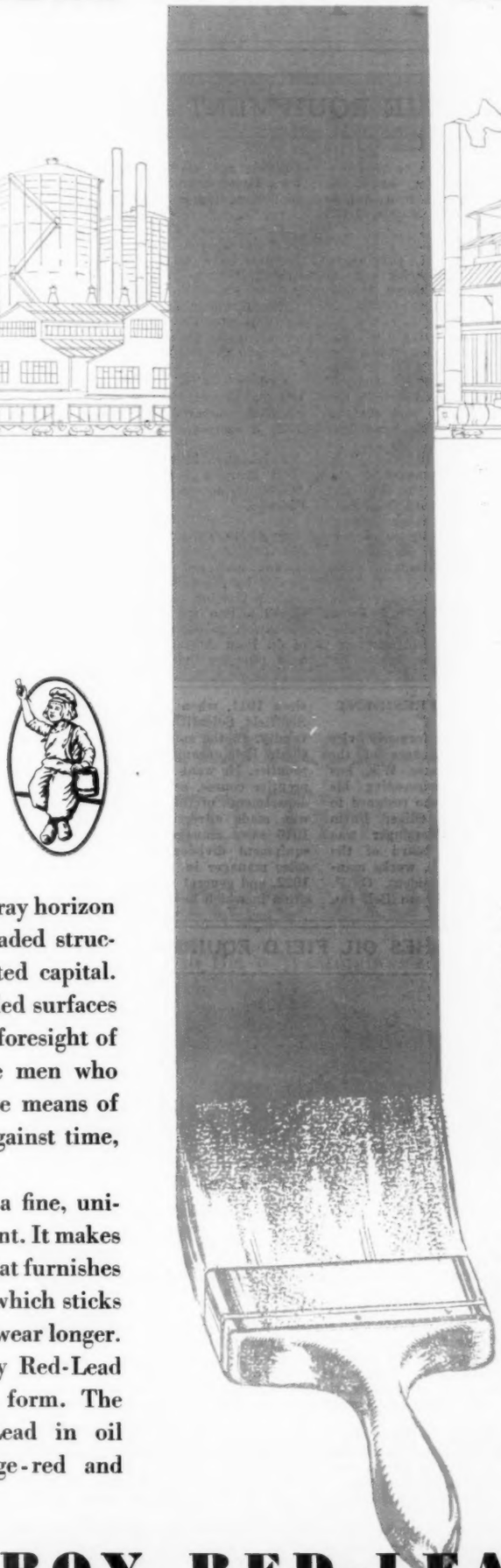
* * *

F. P. Rushmore, in charge of Gypsy Oil Company's activities in the Rocky Mountain region, and E. W. Scudder, chief geologist for the Gypsy company, inspected the Oregon Basin and other fields in northern Wyoming. Mr. Rushmore has headquarters in Denver, Colo. They were accompanied by the Casper, Wyo., representative of the company, Charles L. Reed.

* * *

E. J. Stephany, secretary of the natural gas department of the American Gas Association, Dallas, Tex., and Elmer Schmidt, general superintendent of the Lone Star Gas Company, Dallas, have just returned from a trip to Memphis, Tenn., where they attended a meeting of the program committee of the latter association planning for the convention there in May. Mr. Schmidt is chariman of this committee. There were 11 other members present.

. . . WHERE RED SIGNALS SAFETY



STANDING out against the gray horizon like air beacons, red-leaded structures signal safety to invested capital. These vast areas of red-leaded surfaces bear mute testimony to the foresight of engineers and maintenance men who recognize in red-lead a sure means of protecting iron and steel against time, weather . . . corrosion.

Dutch Boy Red-Lead is a fine, uniform, highly oxidized pigment. It makes a paint that works easily . . . that furnishes an elastic, durable coating which sticks tight—to protect better—to wear longer.

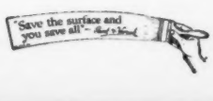
You can buy Dutch Boy Red-Lead in either paste or liquid form. The paste—Dutch Boy Red-Lead in oil—comes in natural orange-red and can be easily shaded to darker colors. Dutch Boy Liquid Red-Lead is supplied in six colors—orange-red, two shades each of green and brown, and black. Our Department of Technical Paint Service will be glad to help you solve your metal painting problems. Ask our nearest branch for booklet—"Structural Metal Painting."

NATIONAL LEAD COMPANY

New York, 111 Broadway—Buffalo, 116 Oak St.—Chicago, 900 W. 18th St.—Cincinnati, 659 Freeman Ave.—Cleveland, 820 West Superior Ave.—St. Louis, 722 Chestnut Street—San Francisco, 2240 24th Street—Boston, National-Boston Lead Company, 800 Albany Street—Pittsburgh, National Lead & Oil Company of Pa., 316 Fourth Avenue—Philadelphia, John T. Lewis & Bros. Co., Widener Building.

LITHARGE of correct physical character and extreme chemical purity is a necessity in oil-refining. Such litharge is made by the makers of Dutch Boy Red-Lead and Dutch Boy White-Lead. You can always rely on its unvarying uniformity. Our nearest warehouse can give you quick shipment.

DUTCH BOY RED-LEAD

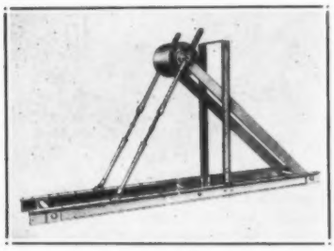


Oil Industry Equipment and Supplies

SUDDEN SHOCKS REDUCED BY OILWELL BELT IDLER

The use of endless belts on beam wells is becoming popular and with the use of such belts a method for tightening must be provided. The Oil Well Supply Co. is offering the "Oilwell" floating type belt idler to accomplish this objective by means of a turnbuckle arrangement.

When installing the idler the turnbuckles are opened to the maximum length, with the lower end anchored in



the first holes nearest the center of the base. The proper tension is obtained quickly and easily by means of the turnbuckles which lower the pulley. The tightening may be accomplished either while the rig is in operation or shut down.

As the belt becomes older and stretched and the turnbuckles are taken up to the fullest extent, further adjustment can be made by moving the turnbuckle anchors to another of the six sets of holes along the base. These six holes permit six such adjustments. Two springs above the pulley provide a means for maintaining an even tension of the belt at all times since, with each impulse of the engine, the springs absorb the sudden shock. This function of the idler is important because it reduces not only the strain on the belt, but also the shocks that ordinarily would be transmitted to the rig and rods.

Another function of the idler is to obtain increased area of contact of the belt around the bandwheel. This promotes more efficient operation of the belt. By means of the "Oilwell" belt idler an arc of contact from 180° to 240° is obtained. No time or production is lost in cutting and clamping belts.

The frame of the idler is of structural steel. The base is 14 feet long. The pulley, 18 inches in diameter with an 18-inch face, is equipped with Timken bearings, Alemite lubricated. The weight complete is 1,350 pounds.

FWD TRUCK HELPS HUNT FOR OIL IN VENEZUELA

A 2-ton FWD truck recently delivered by the Four-Wheel Drive Auto Co., Clintonville, Wis., to the Petty Geophysical Engineering Equipment Co., San Antonio, Tex., is destined for unusual service. Its maximum usefulness is to be achieved in the search for petroleum in the llanos of Venezuela, South America. This unit will be used not only to haul explosives, radio apparatus, camp supplies, instruments and equipment, but to aid five observers' and explorers' cars in traversing the prairies, sand bottoms, and exceedingly bad trails of that region. It will cross a branch of the Cordilleras Mountains, south of Caracas, traveling some 600 miles to the area in which survey work will be done.

The work consists of making seismographic observations in the llanos country and valley of the Orinoco River, the object being to discover concealed petroleum structures under the grass plains of that region. Dynamite is exploded at suitable points and seismic waves are recorded by the observers in cars at distant points.

AMONG THE EQUIPMENT HOUSES

The Chicago Pump Co. is to be represented in New Orleans, La., by R. K. Rothrock, 2204 Jefferson Avenue, and in Syracuse, N. Y., by J. M. MacCrea, 153 Oakland Street.

The William Powell Co., Cincinnati, Ohio, has opened an engineering and export department at 50 Church Street, New York.

The Northwest Engineering Co., Chicago, has appointed Chester Coulter as district manager in the Pacific Northwest, including Washington, Oregon, Idaho, western Montana and British Columbia. His office will be with the Pacific Hoist & Derrick Co., 818 First Avenue South, Seattle, Wash.

Earl L. Stone, sales manager of the Specialty Oil Tool Co. for the Gulf and Mid-Continent territories with headquarters in Oklahoma City, spent several days in Los Angeles recently in conference with officials of the organization outlining plans for the forthcoming year.

New experimental laboratories, costing more than $500,000, which will house the research facilities of the Hercules Powder Co., Wilmington, Del., are nearing completion. The main laboratory building and several smaller units have been finished and are awaiting installation of equipment.

Ray Sexton, who has been covering the Tulsa district for W. C. Norris, manufacturer, has been transferred to Fort Worth, Tex., to fill a temporary vacancy.

The Kennedy Valve Manufacturing Co. has appointed Harvey Embry as its representative in Detroit and in the lower Michigan Peninsula.

Orders received by the General Electric Co. during 1930 amounted to $341,820,312, compared with $445,802,519 for 1929, a decrease of 23 per cent.

Fairbanks, Morse & Co. have made C. B. Murphy manager of the stationary Diesel engine sales with headquarters in Chicago.

G. A. Biesecker, director of sales; John Marshall, technical director, and W. W. Spreng, manager petroleum sales, accompanied by officials and engineers of several petroleum companies, have completed a two weeks' field study in the Southwest to determine the effectiveness of du Pont Asphalt Chromate Emulsion as a pipe coating.

MADE CHAIN BELT PRESIDENT

Clifford F. Messinger, formerly vice president and general manager of the Chain Belt Co., of Milwaukee, Wis., has been elected president, succeeding his brother C. R. Messinger, who resigned to become president of the Oliver Farm Equipment Co. C. R. Messinger was elected chairman of the board of the Chain Belt Co. G. K. Viall, works manager, was elected vice president. C. F. Messinger has been with Chain Belt Co. since 1911, when he graduated from the Sheffield Scientific School of Yale University. In the same year, he entered the Chain Belt organization as a student apprentice. He went through the regular apprentice course, serving in all shops and departments of the company. In 1913 he was made advertising manager and in 1916 sales manager of the construction equipment division. He became general sales manager in 1920, vice president in 1922, and general manager in 1930, a position in which he continues.

WERME ESTABLISHES OIL FIELD EQUIPMENT DIVISION

J. A. Werme Steel & Iron Works Plant

R. A Ebner

J. A. Werme

Creation of a separate division for the manufacture of steel oil derricks, steel fronts, and other drilling equipment is announced by the J. A. Werme Steel & Irons Works, Oklahoma City. R. A. Ebner, who will manage the derrick and oil field equipment division, is well known throughout the Mid-Continent area.

The first 122-foot combination rotary derrick is now being manufactured. The derrick, to be known as the United States derrick, is of structural type and designed to incorporate the best features desired by producers. Designing of steel walking beams, steel jack posts and sampson posts is under way in conformity with specifications of the American Petroleum Institute.

More than 2,000 tons of steel is now on hand in the Werme plant. The building is 600 feet long, providing what is believed to be the longest room under a single roof in the State. A railroad switch within the building facilitates loading and unloading material. The engineering force is operating under the direction of V. M. Sundberg. A. R. Cochran is chief draftsman and W. J. Richards is plant superintendent.

The company expects to market the products of its oil field equipment department throughout the world. The plant, according to plans, will have capacity and equipment sufficient to supply needs of fields similar to the south Oklahoma City Pool or other deep sand pools.

HUHMAN IN TULSA FOR IMPERIAL BELTING CO.

Announcement has been made by the Imperial Belting Co., of Chicago, that Edwin P. Huhman will represent it in Oklahoma in the distribution of O. & G.

Edwin P. Huhman

belting and other products for the oil field, establishing temporary headquarters in the Mayo Hotel, Tulsa. The company has changed its method of sales and now is distributing its products direct from the factory in Chicago.

Mr. Huhman represented the Imperial Belting Co. in Tulsa in 1925 to 1927, inclusive.

AMERICAN METER OFFERS ORIFICE PROVER OUTFITS

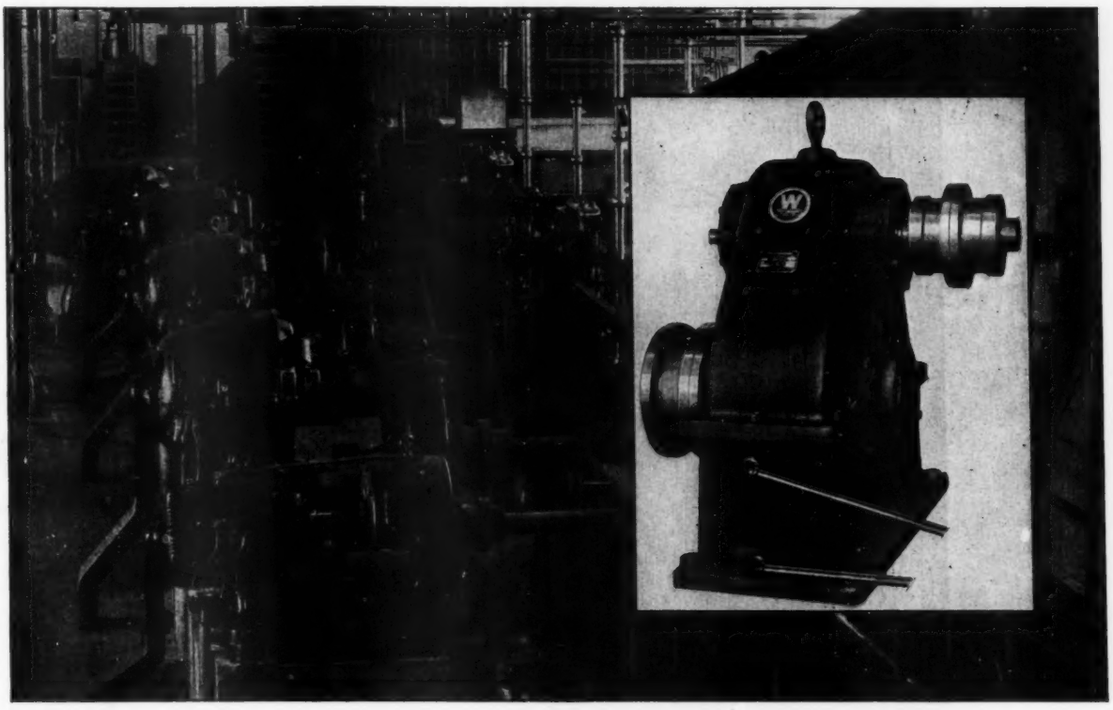
For the purpose of accurately proving displacement meters in place by a company's own maintenance men instead of shipping them to the makers or to a meter shop, the American Meter Co., through the Metric Metal Works, Erie, Pa., has brought out simple assemblies of testing equipment known as the Pierce critical flow orifice prover and the metric low-pressure flow prover.

The testing methods involved are based on scientific laws and can easily be learned. They are fully described in this company's new handbook covering all phases of displacement meters. Each complete outfit includes a prover nipple, a set of orifices, a thermometer, stop watch, and other requisite accessories in a handsome carrying case.

ALLIS-CHALMERS OFFERS EXTENSION TO ITS LINE

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., announces an extension to cover three new sizes in its line of "SSU" centrifugal pumping units of single-shaft, two-bearing design, which now includes ratings from 30 to 500 g.p.m. for heads under 100 feet. Recent adoption of total inclosure of motor housings on the pump end of these units and the use of totally inclosed fan-cooled motors, if necessary, permits their use for severe service conditions.

Some applications of "SSU" pumps are for water supply, circulation of water, oil or brine for heating or cooling systems, for transfer of many liquids, air conditioning, etc.



These Timken Bearings Have Run 70 Times the Life of the Average Automobile

The pinion bearings in the 6 Westinghouse-Nuttall gear reduction units at the Washington Pulp and Paper Company have each rolled up the enormous total of over 2,338,000,000 revolutions, and a recent check-up shows that they are good for many millions more.

Loaded 100% of their Timken catalogue rating, they have averaged 6¼ days per week, 24 hours a day since they were installed in April, 1923.

The total distance traveled by each of these bearings is the equivalent of driving an automobile more than 3,500,000 miles, whereas the average automobile travels but 50,000 miles during its entire life.

A worthy tribute to Timken stamina! Don't you want this same unequalled endurance in your drilling and pumping units, rotaries, crown blocks, swivels, gas engines, speed reducers and countershafts? The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**

& Everywhere . .

Today's Orders Are Meeting Tomorrow's Needs !

This
one line
of NEW OILS
for
all seasons,
all climates,
geographically
universal

Zero pour point
Perfect demulsibility
Lowest carbon content
Matchless color
Triple filtered
Highest flash- and
fire-points
100% pure paraffine oils
Completely dewaxed

DEEP

NEW OILS
Going Big!

THE entire industry has responded to Deep-Rock's recent announcement of these new specification oils.

Orders continue to pour in from every part of the country, from sunny Florida, from Texas, from the Northwest, the Mississippi Valley and the Atlantic seaboard.

Tank car, compartment tank car, drum carload and l. c. l. shipments are going forward daily to jobbers, compounders, franchise customers and dealers. Letters and telegrams from oilmen are enthusiastic about the new Deep-Rock "Four Seasons" oils.

Those stocking the new oils now to meet year-'round needs will find their storage and inventory problems reduced, an assurance of "plus profits" in 1931 over and above their 1930 earnings.

Be a leader in your locality . . . be among the first in your territory to offer these new oils... place a trial order now... phone, wire or write today.

DEEP ROCK OIL CORPORATION
General Sales Offices:
300 West Adams Street, Chicago, Illinois
New York Office: 111 Broadway Refinery: Cushing, Oklahoma

A Unit of the Standard Gas & Electric System

ROCK

ONE OIL 4 SEASONS

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

THERMAL EXPANSION PETROLEUM LIQUIDS

We have been apprised from time to time of the difficulty of handling various hydrocarbons, particularly gasoline and crude oils, in which the expansion of the liquid through the difference in temperature must be taken into consideration. We would appreciate any data you may have regarding the expansion of crude oils and gasoline per degree Fahrenheit, and whether this expansion is constant over the average daily temperature variance?—W. H.

The rate at which the various petroleum liquids change with temperature variations will depend upon the density of the liquid; for a definite liquid the change in volume is constant. The different petroleum liquids may be arranged in six different groups and a fixed coefficient of expansion used with each group.

Group	Coefficient expansion @ 60°	True unit gr. A.P.I.	Gravity range of group
1	0.0004	22	10/35
2	0.0005	44	35/50.9
3	0.0006	58	51/63.9
4	0.0007	72	64/78.9
5	0.0008	86	79/88.9
6	0.00085	91	89 and up

These groups include: 1—Crude oil, fuel oil, etc., 2—Kerosene, gas oil, fuel distillate, 3—Gasoline, 4—Gasoline, 5—Natural gasoline, 6—Natural gasoline, propane, butane.

Circular 154, United States Bureau of Standards, National Standard Petroleum Oil Tables, contains Table 2 that should be used for correcting to a unit volume. It is explained that this table shows the volume occupied at 60° F. of a quantity of oil of any A.P.I. gravity at 60° occupying unit volume at the indicated temperatures. For example, if at 60° the A.P.I. gravity of the oil is 22, 1 gallon measured at 105° will have a volume of 0.9822 gallon at 60°. Intermediate values may be interpolated. The values given in the body of the table are in the form of multipliers; that is, the volume of oil at the indicated temperature and degrees A.P.I. multiplied by the corresponding factor in the table equals the volume at 60° F. For example, if the A.P.I. gravity of an oil at 60° equals 22 and the volume at 105° equals 5,600 gallons, then the volume at 60° equals 5,600x0.9822, or 5,510.32 gallons. This table can also be used to calculate the percentage change of volume to reduce to 60° F. The percentage factor is 100 times the difference between the tabulated value and unity. In the case given above, the percentage factor is 100 (100—0.9822) = 1.78; that is, any volume of oil of 22 A.P.I. at 60° F., measured at 105° will decrease in volume by 1.78 per cent on being reduced to 60° F. For observed temperatures below 60° F. the volume correction should be added to the measured volumes; for temperatures above 60° it should be subtracted.

PARAFFIN WAX CRYSTAL FORM

What is considered to be the normal shape of paraffin wax crystals? Is the mottling of wax caused by some particular wax structure?—F. J. L.

Recent investigations concerning paraffin wax crystals are described by E. Katz in the Journal of the Institution of Petroleum Technologists, 16, 870; 1930. Working with wax, derived from paraffins obtained from Poland and Asis, with melting points ranging between 102° and 145° F., it was concluded that the hexagonal form is the foundation from which the secondary needle crystal may be produced.

"In the course of this work it was seen that a paraffin crystal never forms as a needle, but transforms from the plate form to the needle form in the course of crystallization. The formation of a needle without development from a plate was never observed. As the smallest crystal, that of salt, for instance, shows from the beginning of its formation the typical structure of its final form, so the paraffin crystal shows in the beginning the well developed form of a plate."

This same article mentions mottling. The characteristic mottles which appear in the blocks of paraffin wax are considered to be caused by air and gases dissolved in the wax, and the larger the percentage of oil present the more these mottles will appear. A photograph is shown in which a mottle extends over considerable space and what is seen is a cut through a free space in the wax, this space being probably filled with gas or air. The needles are shown emerging in buds, small sharp ones as well as large strongly developed ones. It has the appearance of a typical "blow-hole" in a metallic casting and probably is caused to be formed in a similar way.

SILICA GEL AS DRYING AGENT

Have you any information as to the water absorbing capacity of silica gel? Is this material suitable for drying propane and butane which is to be bottled in cylinders?—N. C. A.

Silica gel has been suggested as an efficient agent for the removal of moisture from both propane and butane with an attraction for water equivalent to approximately 50 per cent of its weight under favorable conditions. The drying is practically complete on a commercial scale, leaving no more than a trace of moisture in the product.

The drying unit, which may operate up to 2,500 pounds pressure, consists of two or more absorbers in a continuous system. Each of these is filled with the silica gel, permitting one to remain in service while the others are being revived with hot air. A heater gives the required temperature to separate the absorbed water and the air is sent through the absorber by means of a blower. The compressed gas is passed through without any need for interruption, the dry gas passing out of the top of the absorber and the absorbers cut in or out of service by means of properly located valves.

LIQUEFIED PROPANE FOR REFRIGERATION

With further reference to the danger involved in the use of liquefied propane for refrigeration. It is necessary that it be brought inside the home refrigerator in liquid form in order to extract the heat of vaporization from the stored items. Is the so evaporated propane blown into the air? Probably so, because for domestic use it is hard to make a simple arrangement for accumulating the propane again for firing purposes.—G. B.

We have no knowledge of a domestic refrigerator making direct use of propane as a refrigerant. However, it is used as the source of heat in refrigerators operating on the absorption principle. Ammonia is absorbed in water from which it is released by heating and then liquefied by a stream of water. This liquefied ammonia is evaporated at low pressure and temperature in the evaporator. As the liquid evaporates it absorbs heat from the surrounding objects or air and in this way produces the low temperature. Then the ammonia is again absorbed in the water from which it had been driven off by the heat. This cycle is repeated over and over again.

The small quantity of heat required for this form of refrigerator makes liquefied propane an ideal fuel in localities where gas is not available.

CRUDE OIL AND NATURAL GASOLINE BLEND FOR SHIPMENT

We have some crude oil which is 32 gravity and can get casinghead enough to bring it up to 40 gravity or better. Could this blend be graded as crude oil and shipped to a refinery in ordinary tank cars?—P. C. D.

The Interstate Commerce Act as amended, paragraph 3, section 10, provides in substance: Anyone who shall deliver property for transportation to any common carrier, who shall knowingly, by false classification of the contents of the package, obtain transportation for such property at less than the regular rates then established and in force on the line of transportation, shall be deemed guilty of fraud and shall upon conviction in any court be subject to a fine not exceeding $5,000 or imprisonment for two years, or both. This law suggests that false representation concerning a freight shipment may lead to serious consequences.

So far as we are informed no definition, based on composition of crude oil has been adopted by the Interstate Commerce Commission for freight classification purposes. Several applications for a crude oil freight rate on blends of crude oil and natural gasoline have been considered by the Interstate Commerce Commission. A recent example is case No. 20274, decided October 8, 1928, in which 13.6 to 23.9 per cent natural gasoline had been added to a crude oil of about 35 A. P. I. gravity to bring the oil up to 40 to 44 gravity. This product was shipped in standard tank cars.

At the time of the hearing the generally recognized price table for crude oil quoted gravities ranging from 28 to 52 A. P. I., and above. The railroads and pipe lines make no distinction because of gravity when transporting petroleum. It is known that the quantity of gasoline that may be obtained from petroleum is indicated by the density of the oil, the lighter the oil the larger the percentage of gasoline it will yield, and the gasoline content as a rule increases with the A. P. I. gravity.

Natural gasoline, or casinghead gasoline, is a product that may be extracted from some natural gas, but is widely made from gas which is produced in the same well with oil and is separated from the oil either by mechanical means or at the top of the well from the casinghead. It is quite generally acknowledged that this kind of gasoline has been a part of the crude oil. The trade considers the two terms to mean the same product but natural gasoline is preferred. Natural gasoline is more volatile than refinery gasoline, so large quantities are required for blending with refinery gasoline to make it evaporate, boil at a lower temperature and therefore more suitable for use as a motor fuel.

The above are some facts presented to the commission and it was further shown that the commodity as shipped, with the added natural gasoline, could not be distinguished from crude oil by sight or chemical analysis. The transportation risks were identical with those of crude oil from other producing districts. The ruling by the commission was that in this case the commodity shipped was essentially crude oil in the characteristics shown.

It would appear that this ruling was a reasonable one. Such blending may be practiced so long as the product retains the common properties of crude oil; excessive quantities of natural gasoline would cause the blend to have a high vapor pressure and consequently be dangerous for shipment in ordinary tank cars. A product with an excessive quantity of natural gasoline would not be crude oil but would have to be classified as natural gasoline.

Bringing a crude oil from 32 gravity to about 40 gravity would not require a large quantity of natural gasoline, the blend would be similar to a commonly recognized grade of crude oil, and would apparently coincide with the findings of the Interstate Commerce Commission covering a blend of almost identical properties.

ALUMINUM STEARATE AND GREASE

Experimental batches of aluminum stearate grease do not finish clear, also the oil separates after standing a few days. We bring the oil up to about 300° and then add the stearate; after mixing well the batch is cooled by circulating cold water. The oil separation takes place with different percentages and we would like to know if this trouble is caused by impure stearate or do you know of some other factors?—H. A.

The purity of aluminum stearate is important, the common impurities include moisture, excess aluminum, soluble salts, and stearic acid. These impurities may cause a grease to be cloudy or an excess of the aluminum stearate may explain the condition. However, since the oil separation results when different percentages are used, it appears that the process of blending, heating, and cooling may not conform to good practice.

The quantity of aluminum stearate to be added should vary with the properties of the oil, but the usual quantities vary between 2 and 10 per cent, the proper quantities for the particular oil being determined by experiment. The mix should be made with a small quantity of the oil, slightly warmed, about 20 to 25 per cent of the total quantity, and the stearate sprinkled into the oil while it is in motion. When this mixture is uniform the rest of the oil is added and the temperature very slowly brought up to about 300° to 350° F. There should be no rapid cooling; on the contrary, the grease should be permitted to slowly cool while the stirring is continued until the temperature has fallen to about 200° F.

It is suggested that the cooling with cold water be stopped and then if the product does not separate on standing, but is not clear, it would be well to look for moisture either in the oil or in the stearate.

Aerial view of the main factory of The Garlock Packing Company at Palmyra, New York

Where GARLOCK Products Are Made

In the heart of industrial America is located the central plant of The Garlock Packing Company . . and branch factories are advantageously situated at Birmingham, Denver, Los Angeles, San Francisco and Hamilton, Ontario. From these plants come Garlock packings, gaskets and molded goods of asbestos and rubber . . . manufactured complete from crude materials to finished product.

For every industrial requirement . . . steam, oil, gas, air, water, ammonia, acids, chemicals, process liquors . . . there is a suitable Garlock packing, made of asbestos, rubber, cotton, flax, alloys, metals or combinations of these materials. The GARLOCK name and trade mark is your assurance of quality.

THE GARLOCK PACKING COMPANY
PALMYRA, NEW YORK

A World Wide Organization with Sales Offices and Warehouses in all Principal Industrial Centers

GARLOCK

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

WHEN IS LIFT UNPROFITABLE?

At what point in a well's production does the gas lift cease to be profitable? If intermittent flowing is to be substituted for continuous gas lift how low should the production decline before the change can be made to advantage?—S. A. N.

Continuous gas lift reaches an economic limit in small wells beyond which it is not advantageous to go, according to S. F. Shaw, of the Carter Oil Co., who answers your question. This, he explains, is because of excessive consumption of gas per barrel of oil. This economic limit is reached earlier in the life of wells as the depth increases. It has been found under certain favorable conditions that continuous flow can be replaced by intermittent flow and lifting costs held at a low figure.

Wells with depth of about 4,000 feet require an output of approximately 8,500 feet of gas per barrel of oil when lifting 200 bbls. per day of oil free of water on continuous flow, and an output of 16,000 to 18,000 feet per barrel when producing 100 bbls. per day. The cost for gas at 3½ cents per 1,000 feet is then 30 cents to 60 cents per barrel. These costs are such that it is desirable to make a change in the manner of operating.

Intermittent flowing has been employed for lifting as much as 3,000 bbls. per day from a depth of 4,000 feet, but it is questionable whether this is the best method. When the well has declined to 200 bbls., there is no question as to the desirability of making the change. The general practice in wells making 200 bbls. per day is to admit gas periodically to the same gas line in the well that was employed for continuous flow. Input volumes are reduced to about 4,000 feet per barrel under these conditions. When the well has declined to 100 bbls. or less, it has been found desirable to run two strings of tubing one within the other, the outer string being fitted with a chamber at the bottom with as large a diameter as the casing will admit and provided with a standing valve at the lower end. The oil is flowed intermittently through the inner tubing. With two tubing strings the input factor can vary from 1,500 to 3,000 feet per barrel of oil, resulting in a lifting cost for compressed gas of 5¼ cents to 9 cents per barrel.

Admission of gas is controlled by intermitting mechanism, either of the automatic or of the timed interval type.

Wells 600 feet or more in depth are being successfully flowed intermittently in California. In Seminole at depths of 4,000 to 4,500 feet several wells have been intermittently flowed for periods of a year or more with encouraging results. A well at Cromwell, with depth of 3,300 feet making 20 bbls. per day, is being successfully produced by intermittent flow. Other wells near Madison, Kans., at depth of 2,400 feet; and wells near Chelsea, Okla., with depths of 400 feet are being produced by intermittent flowing employing the automatic type of mechanism which is controlled by the height of the fluid level. These shallow wells of 400 feet depth and producing one-half and 2 bbls. per day are probably consuming from 500 to 700 feet per barrel lifted, at a lifting cost for gas between 2 cents to 10 cents per barrel of oil.

PRAIRIE DOG AS HYDROLOGIST

Statements that prairie dogs show whether there is water under the ground or not have caused a good deal of argument around here and some laugh at the idea. Can you tell me whether there is any truth in these stories? If there is, will you tell me please how the prairie dog shows the presence of the water?—R. W. S.

E. M. Carter, of Austin, Tex., graduate of the New Mexico School of Mines and known as an engineer in hydrology and subsurface hydraulics, traces underground water systems by flying over an area and noting prairie dog colonies. He asserts that the presence of these colonies give definite information concerning underground water courses at depths greater than 50 feet as surely as would be the case if these streams lay on the surface of the earth.

Mr. Carter says he discovered that small colonies of prairie dogs indicate underground rivulets, and that as the size of the underground stream increases the number of the animals and their burrows grow in proportion. Thus, after observing the position and size of prairie dog colonies from the air Mr. Carter says he is able to determine the direction and extent of underground water courses.

Mr. Carter says he has made numerous tests of the prairie dog theory and has dug wells in a territory where water has been indicated by prairie dog towns and has always found it even though in some cases the shafts have been dug to a depth of over 240 feet to get results.

The explanation of the method is that prairie dogs, like other animals, must have water for their existence and they dig to it in their towns and they would not continue to live in an area unless water were available. So where these animals are found it is quite safe to assume that water will be encountered by digging to reasonable depths.

Willow trees and cottonwoods are also said to be markers of underground streams of water, the former at depths of 10 to 25 feet and the cottonwoods at depths of 25 to 50 feet, and Mr. Carter has worked out a comprehensive system of surveying an area from an airplane using these markers and studying the general contour of the surface and from such a survey says he is able to locate water supplies accurately, developing large flows of water in areas that otherwise have been deficient in it.

WANTS TO INCREASE GAS FLOW

I am submitting herewith a sketch of an artesian well I drilled last year and am asking for information as to how to get more gas and water from it. The well was drilled dry to 445 feet with a 6¼-inch hole. At 447 feet we had considerable gas and two hours later the hole was full of water, making 1-inch flow. From 447 feet on the hole was drilled wet, with 5⅝-inch bit. The gas and water increased until at 735 feet the flow of water was 2¼ inches.

The gas is used and it is separated by a 12-foot joint of casing on top of the well, which does the work all right. If I run 2-inch tubing with a packer placed just above the gas and water, reducing the size of the hole from 6¼ inches to 2 inches, would this method make the water and gas flow faster? It seems that the output of gas depends on the water flow as the deeper the well was drilled the water increased and so did the gas.

If I were to relieve the water pressure by placing a packer at 435 feet, would this increase the rock pressure? What is the water pressure at 435 feet and at 735 feet? Gas has been coming from wells of this kind in Pike County for 40 years, but it never has been used. The water does not hurt the gas or stop its flow. However, the gas and water do not flow where the sea level is much over 600 feet.—F. D. S.

A study of your sketch and of your letter by men acquainted with problems of this sort makes it seem likely that the gas you are getting is entrained in the water that accompanies it and the only way to get increased gas output is to increase instead of decrease the water flow.

It seems evident that the hydrostatic head for the water from the lime formation is about 600 feet if wells cease to flow when the surface elevation is about 600 feet above sea level. This would indicate that your well with its top at 560 feet above sea level is in effect an artesian well and the rate of water flow depends upon the difference in hydrostatic head between the water at its source and the point of discharge at your well.

It therefore does not seem likely that to run tubing in your well and place a packer above the water and gas with 300 feet of perforated tubing below the packer will aid you, because flowing through this smaller pipe will increase frictional resistance and decrease the output of water.

If you consider this formation as a whole and assume that in the beginning it was charged with a given number of cubic feet of gas and water and there was no movement in the reservoir rocks, the gas then would tend to come to the top of the water and accumulate along the upper part of the lime formation.

It appears that the top of this lime is at 435 feet below the surface in your well, and when you drilled into gas at 447 feet you in reality opened the gas stratum and all drilling below that point only penetrated the water-bearing portion of the formation. As more hole was made and the increase of water was noted there was apparently an increase in gas, but there is no way of telling whether this increase in gas is due to the additional hole or merely to the fact that the gas was finding an outlet at the top part of the lime formation penetrated by the drill and making its escape there. In other words, you do not offer enough evidence to permit the assumption that this lime formation is filled with gas below the cap rock and therefore that the flow of extra water will mean an increase in gas production.

This department is unable to say whether, if the size of the ejection tubes, or tubing, is reduced from 6¼ inches to 2 inches you will increase the friction and reduce the flow of water, but this does not indicate that decreasing the flow of water will increase the flow of gas.

One suggestion is that you might try plugging the well just below 445 feet, where you state the water was first encountered and see if you can get dry gas from that portion of the lime formation just below the cap rock. It is not to be assumed that such a repair job will shut out the water now that it has broken through into the hole unless there should be found a good hard formation between the top of the water and the bottom of the gas, and as this in any event would be only a shell, it is not likely to do you much good as a seat for the packer.

As the head seems to be established at 600 feet for flow of water it might be possible that if you added 40 feet of 6¼-inch casing to the top of your well you could create a condition that would increase the gas flow. With this added 40 feet of casing it is assumed that the water would cease to flow over the top of the well but that it would come up nearly to the top of the casing and any gas in the water would tend to escape through the water to the atmosphere or to such receptacles as you provide.

If the pressure within the receptacle is reduced below atmosphere, or in other words, a partial vacuum is maintained, it would seem that the gas flow would tend to increase because of the difference in pressure between the formation pressure and the pressure within the gas tank.

The water is evidently moving by hydrostatic head, and if your theory is correct in that by producing more water more gas will be obtained, it is possible to prove its soundness by taking a sample of this water and gas as they are produced and having the gas extracted from the water and quantity determined carefully. From this data it would be possible for a chemist to advise you whether this quantity of gas represented the quantity that should be entrained in the water at the pressure and temperature found within the lime formation, or whether there was free gas coming from the well.

If it were found that there is more gas than that which should be contained in the water at the given pressure and temperature existing in the lime formation it would tend to prove that your gas and water have stratified out in the formation and if you can cut off the water at the top of the lime formation and leave space between this plug and the lime cap rock gas will tend to escape there in greater quantities, but mechanically such a shutoff is very difficult to make.

It is suggested that you obtain from the state geologist a report of the formations in Pike County and study them to learn more of this formation from which you are producing and if it does seem that you must produce more water to get more gas, it is suggested that you make the opening larger rather than smaller, because this will reduce the friction of flow of the water and take less energy to move it to the surface. Whether this energy is due to hydrostatic head of the water body or gas under pressure will make no difference in ultimate results.

WHY WAS IT CALLED THAT?

DEAD LINE

The adjective "dead," applied promiscously to indicate absence of life or motion, is used in the term "dead line" to denote a cable or rope that is anchored or otherwise fastened and therefore dead.

The expression "dead end" is used to describe that end of a rope which is tied or anchored so that it cannot break away when the strain of a load is applied.

Twenty-Six Completions in the East

Ten Oil Wells Had Only 29 Bbls. Initial. Twelve Were Gas Wells and Four Dry Holes. New Deep Test Started

By Staff Correspondent

PITTSBURGH, Pa., Jan. 26.—Very favorable drilling weather has been offset by a lack of water which is prevalent throughout the Eastern fields. Overproduction of oil is still apparent in spite of the 30 per cent decreased runs in West Virginia, Southwest Pennsylvania, and Southeast Ohio. At the present moment, gas production is greatly in excess of demand, which has been diminished by protracted industrial plant shutdowns, and the fact that gas is not yet in transit to the eastern markets which will absorb the output of many newly opened reserves.

SOUTHEAST OHIO

The week continued fairly dull with 26 completions, 10 of which were oil wells with an initial start of but 29 bbls., 12 were gassers, and 4 were dry holes. The deep test started by Benedum & Trees in Section 26, Island Creek Township, Jefferson County, Southeast Ohio, and on the Wayne Coal Co. tract, has now passed the 2,000-foot level and with no showing thus far. The well is scheduled to go to a depth of 6,000 feet.

The only gas well of any size completed in Southeast Ohio was the second test of the Ohio Fuel Gas Co. on the W. H. Wilson farm, SW, Section 19, Harrison Township, Perry County. It was completed in the Clinton sand at a depth of 3,560 feet and is showing for about 900,000 feet. In Muskingum County, the Wittmer Oil & Gas Properties drilled a test on the Sidney Taylor farm in the NW, Section 20, Perry Township. It reached the Clinton sand at 4,424 feet and will make about 300,000 feet.

In Ashland County, the Great Lakes Oil Co. completed No. 3 on the Barbara Easley heirs' farm, Section 9, Lake Township, at a depth of 660 feet and in the Berea sand. It is showing for about a 4-bbl. pumper. In Athens County, Clark and others drilled a test on the J. S. Radford lease of 17 acres near Fisher, Lot 116, Athens Township. It is showing for about 200,000 feet of gas from the Berea grit at 1,247 feet.

In Columbiana County, C. S. Peters completed a test on the A. G. Smith farm in Section 12, Yellow Creek Township. It is showing for a half-barrel producer from the Berea grit at 1,150 feet. In the south part of Lot 298, Sutton Township, Meigs County, Tyre and Hovis drilled a test on the Ella Cobb farm to a depth of 1,631 feet and in the Berea sand and it is showing for a 1-bbl. pumper.

In Section 13, Monroe Township, Muskingum County, James E. McLaughlin completed No. 7 on the Richard Boyce farm in the Berea sand at a depth of 1,036 feet and the well is showing for about a 1-bbl. pumper. In Noble County, in the NE, Section 33, Stock Township, the Bern Oil & Gas Co. completed a test on the C. B. Spence farm in the Stray sand at 974 feet. The test made 3 bbls. the first day after shot.

In Washington County, the Duck Oil Co. drilled a second well on the Elizabeth A. Kinsey farm, near Warner, Lot 46, Salem Township, in the Buell Run sand at 272 feet. It was good for a half barrel naturally the first day. In the same section, George Chichester completed a second test on the H. Neuberger farm in the Buell Run sand at 290 feet. It was a dry hole. On Lot 45, near Warner, D. Osborn and others drilled a test on the Chris Lauer farm to a depth of 295 feet and in the Buell Run sand and it was also a dry hole.

Drilling in Ohio

In Hopewell Township, Muskingum County, the Preston Oil Co. is down to 700 feet on the M. Leasure farm, Section 6. The Hopewell Fuel & Gas Co. has reached 2,800 feet in a second test on the John C. Sidle farm, Section 6, Licking Township. In Section 6, Jackson Township, the Pure Oil Co. is down to 2,650 feet in No. 5 on the Lloyd McKee farm. This farm has been very productive. In Brush Creek Township, there are two tests drilling. One nearing the sand is a test of the Fritz Oil & Gas Co. on the R. G. Pletcher farm, Section 4, which has reached 3,700 feet and the other is a test by the same company on the B. F. Floyd farm, Section 3, which is drilling at 1,200 feet. In Washington Township, the Preston Oil Co. is down to 2,920 feet on the J. O. Sloan farm, and has rigged up on the B. T. Slack farm. In the same township, Wilson Brothers have a rig standing on their own farm, and the Atha Oil Co. is down to 3,220 feet on the John Brown and others lease. In Perry Township, the Preston Oil Co. has a rig standing on the John C. Hicks farm. In Wayne Township, the Atha Oil Co. has rigged up on the J. B. Corbin farm, and the Preston Oil Co. has made a location on the Ed Frick farm in Section 9. In Falls Township, the Atha Oil Co. is down to 920 feet on the W. H. Atha farm. In Seciton 3, Clay Township, William Cline and others have a rig standing on the Howard H. Doyle farm.

In Perry County, the Wehrle Co. has a fishing job at 3,000 feet on the Frank Hammond farm, Section 21, Clayton Township. In Section 18, Harrison Township, David L. Melick, trustee, has a rig standing on the H. E. Stoneburner farm. In Section 11, Reading Township, the Mid-East Co. has a rig standing for a second test on the Ed Brown farm. In Section 31, Clayton Township, the Wehrle Co. has rigged up on the Wolfe heirs' farm, and in Section 1, Jackson Township, W. G. Perrigo & Co. has a rig standing for No. 6 on the J. A. and W. E. Donnelly farm. In Section 20, Madison Township, the Atha Oil Co. is down to 2,500 feet in No. 17 on the Melick Brothers lease.

In Island Creek Township, William Graham and others have reached the Salt sand on the G. W. Green farm, Section 22, Jefferson County. In the same section, Elliott & Co. are drilling at 1,000 feet on the Cora B. Lemon farm. In Section 9, same township, a local syndicate is down to 700 feet in a second test on the D. S. Carr farm. No. 1 was a dry hole. In Section 19, the Sanders Oil Co. has reached 1,000 feet in a second test on the John Spohn farm.

In Athens County, the Union Drilling & Producing Co. is down to 3,150 feet on the Charles Kontner farm, Section 23, York Township, and 1,200 feet in a second test on the W. H. Powell farm. In the same section, the Hocking Valley Drilling Co. has reached 2,200 feet on the Nelsonville Brewery Co. lease, and John Walters is drilling on the Nelsonville Foundry Co. lease at a depth of 800 feet. In Hocking County, the Associated Oil & Gas Co. has a rig up on the A. L. Jones farm, Section 4, Starr Township. In Holmes County, the Ohio Fuel Gas Co. is down to 1,550 feet on the Clark Miller farm, Section 11, Washington Township, and in Section 12, Monroe Township, the Arkansas Fuel Oil Co. is down to 3,350 feet in No. 4 on the James T. Patterson farm.

In Ashland County, there are few tests drilling, this territory having been pretty well proved by the recent drilling. The Great Lakes Oil Co. is drilling two more wells, No. 4 on the Barbara Easly heirs' farm, now at 350 feet, and No. 8 on the Mary M. Young farm, drilling at 300 feet. Both are in Lake Township. In the same township, and Section 22, the Gold Crown Oil & Gas Co. has started No. 6 on the Harry Horn lease of 53 acres and it is now down to 270 feet.

WEST VIRGINIA

There were three small oil wells completed in West Virginia. In Williams district, Wood County, Crawley and Carr completed a test on the C. A. Varner farm at 1,020 feet. It is showing for about 10 bbls. at the present time. In the same district, and on Big Run, Stewart and Athey drilled a test on the Charles Varner farm in the Second Cow Run sand and it will make a 2-bbl. pumper. In Elk district, Kanawha County, Marshall and Price completed No. 60 on the Goshorn and others' tract. It is estimated it will make a 5-bbl. pumper naturally but at present it is waiting on a shot.

Gas Wells

In Boone County, Godfrey L. Cabot completed No. 4 on the Mary Dickinson farm in Sherman district, and it will make a small gas well. In Sheridan district, Calhoun County, the Chemical Oil Co. drilled its test on the Harriet Fling farm deeper to 2,084 feet and in the Injun sand. It is now showing for a fair gas well. In Gilmer County, the West Virginia Utilities Co. completed a second well on the Waldo Bush heirs' farm in Center district. It was dry through the Injun sand and to a depth of 1,925 feet.

In Lincoln County, the United Fuel Gas Co. completed two wells, both on the Horse Creek Land & Mining Co. tract. In Duval district, No. 4,275 went to a depth of 2,485 feet and is a small gas well. In Jefferson district, No. 4,246 is somewhat larger.

In Roane County, there were three completions. In Smithfield district, the Central States Gas Co. completed a test on the John L. Patton farm in the Injun sand at 2,016 feet. It will make a fair gas well. In the same section, the United Fuel Gas Co. drilled No. 4,311 to a depth of 1,976 feet and the Injun sand on the A. V. Adams farm. It is good for 250,000 feet. The Southeastern Gas Co. completed No. 3 on the A. T. Ferrell farm, Smithfield district, in the Injun sand at 2,174 feet and it is showing for a small gas well.

In Church district, Wetzel County, the Lemley Oil & Gas Trust completed a test on the E. Lemley heirs' farm. It was completed at 1,608 feet and in the Salt sand. It will make a gas well.

Drilling in West Virginia

In Tyler County, the Manufacturers Light & Heat Co. has rigged up to test the A. E. Lemasters farm in McElroy district. In the same district local parties have a rig standing on the M. V. B. George farm, and Berkley and Shrader have reached 1,150 feet on the William Sandy farm. In Ellsworth district, the Manufacturers Light & Heat Co. has a rig standing for No. 3,449 on the C. L. Parks farm, and in Union district Morgan Brothers are down to 925 feet in a second well on the J. B. Dancer farm.

In Monongalia County, the Pedlar Run Oil Co. is down to 2,487 feet on the Lewis R. Hess farm, Clay district. In Battelle district, the Pittsburgh & West Virginia Gas Co. is cleaning out No. 5,295 on the William Kinney heirs' farm preparatory to drilling deeper from the Injun sand at 2,397 feet. In the same district, the Manufacturers Light & Heat Co. is drilling deeper No. 2,797 on the M. J. Garrison farm and have reached 2,382 feet. In Marion County, the Owens Bottle Works Co. is down to 887 feet in a second test on the H. L. Tennant farm in Paw Paw district. In Mannington district, Sutton Brothers have reached 1,130 feet in a second well on the C. A. Thomas farm. In Grant district, the Owens Illinois Glass Co. has a rig standing on the Joseph Orth farm.

In Logan County, the Big Creek Gas Co. has spudded in and started drilling on the Sallie A. Ball farm in Chapmansville district, and M. V. Jennings, trustee, has made a location on the Chapmansville district property. In Logan district, the West Virginia Gas Corp. has made a location for No. 27 on the Dingus Run Coal Co. lease. In Chapmansville district, the Hope Natural Gas Co. has started drilling No. 7,427 on the Elias P. Stowers farm deeper and has reached 2,200 feet. In Ceredo district, Wayne County, W. P. Floyd is down to 1,760 feet on the J. H. and J. B. Start farm.

In Wood County, L. C. White and others are drilling on the A. J. Newland farm in Union district and have reached 1,650 feet. In the same district, the Reno Oil Co. has rigged up on the Levi and Mary Gainer farm. In Williams district, Crawley and Carr have made a location for a second test on the C. A. Varner farm, No. 1, having started in at 10 bbls., and Grant and Bailey have made a location on the Henrie Morgan farm. In the same district, the Plum Run Oil Co. has taken a lease on the Francis Delaney farm and made a location. In Walker district, the Four States Oil Co has a rig standing on the John Roberts farm.

In Clay County, the United Fuel Gas Co. is moving in the tools on the W. S. Pierson farm in Henry district. The Pure Oil Co. has two wells drilling in this district, on the B. F. Pierson farm No. 2 at 2,016 feet, and on the A. J. Horan No. 4 at 1,100 feet. C. F. Wilson and others have part of the material on the ground on the A. B. Hersman farm, Henry district.

SOUTHWEST PENNSYLVANIA

There were but two completions in Southwest Pennsylvania and both were in Greene County. In Perry Township, the Greensboro Gas Co. drilled a test on the Anna L. Schultz farm through the Elizabeth sand and to a depth of 3,002 feet and it was dry through all sands. In Greene Township, the Philadelphia Natural Gas Co. completed a small gas well in a test on the Taylor Schultz farm. It was drilled in the Fifth sand at a depth of 3,475 feet.

OLD TIMERS FORM COMPANY

HOUSTON, Tex., Jan. 24.—Charter has been granted Hamill-Smith Oil Co., a production company, with a fully subscribed capital stock of $50,000. C. G. Hamill is president; C. B. Hamill, vice president; and R. E. Smith is secretary-treasurer. S. G. Hamill was the driller on tour when the discovery well at Spindletop was drilled in 30 years ago. He has been identified with coastal Texas fields ever since being president also of the Hamill Drilling Co., a contracting firm, and of Southern Drilling & Production Co., another producing company. C. B. Hamill is his son. "Bob" Smith started as a youngster in the business at Humble; later representing W-K-M at Corsicana, and of late being in the contracting and production business on his own account.

SOUTH PENN ELECTION

PITTSBURGH, Pa., Jan. 24.—The annual meeting of the South Penn Oil Co. was held in its offices in Pittsburgh, at which meeting the directors were re-elected for the ensuing year. The officers are L. W. Young, Jr., president; P. H. Curry, vice president; F. J. Huffman, vice president; S. G. Hartman, treasurer, and John L. Hays, secretary. Other members of the board are R. W. Cummings and C. B. Turner. Mr. Turner was recently appointed to the board in place of R. J. Vandervender, who was recently transferred to Oil City, Pa., and on the board of the Pennzoil Co.

Encouraging Factors for 1931

By W. T. ANDERSON

In common with the country generally the oil industry entered the new year with renewed confidence and the conviction that 1931 would be a better year than 1930.

For one thing we have that much of our troubles behind us and therefore so much nearer better days.

There are 20,000,000 barrels less crude oil in storage than a year ago. The refiners have so regulated their winter production there is every hope they will be able to hold gasoline storage near the 40,000,000-barrel limit estimated necessary to enter the main consuming season without fear of distress motor fuel wrecking the market.

As the situation stands the industry has done its utmost towards balancing supply with demand, the essential requirement for a return of prosperity to the oil business.

How soon that prosperity will be fully restored rests upon the continuance of wise policies.

However disappointing the past year was to the oil industry, as it was to the country generally, there was no slackening in preparations for the natural expansion of the business of the industry by foresighted leaders.

Pipe Line Program

For example, look at the immense extension of pipe lines for oil, natural gas and gasoline which is already being continued into 1931 at unabated pace. Enough is now known to assure that the pipe line construction record for this year will equal that of 1930 and may exceed it as general conditions improve.

The program for nation-wide distribution of natural gas in the great industrial and population centers has scarcely more than begun. The great improvement in material and equipment provided by the manufacturers of supplies has immensely enlarged the potentialities of the oil and gas industry, as witness the long distance transportation of natural gas and gasoline, drilling to nearly 10,000 feet and the handling of high-pressure wells.

The hundreds of millions of dollars being invested by operating companies in availing themselves of all these improvements are a sufficient evidence of faith in the continued growth of the industry. Just as a contrasting example of what modern efficiency means in cost may be cited the fact that the $4,000 spent for rig irons for an average well in Oklahoma City would have covered the entire cost of drilling a well not so many years ago.

On the other hand the productive results speak for themselves. Most of the drilling last year was in known productive areas where flush production was assured. The drilling in the older areas where smaller production might be expected was postponed, with the result that average initial production of the 21,000 wells drilled in 1930 rose to the amazing figure of 855 barrels per well.

While the higher estimates of potential production have been discounted there is no doubt that we could produce for some time twice as much oil as was produced last year but there would be no lasting market for it, if so produced, which is the strongest guarantee against it.

Production of Crude

The production of crude last year is estimated at around 901,000,000 barrels, compared to 1,004,000,000 in 1929 and 898,000,000 in 1928 and 903,000,000 in 1927. Thus, in a measure, the producers succeeded in their effort to keep the output in line with that of 1928 as was advocated at the time.

Allowing for some increase in consumption of gasoline this year there will be a proportionate increase in the demand for crude under the same producing and manufacturing policies.

The industry is on its way out of the depression.

The position of the refining branch of the oil industry was unique among manufacturing establishments during 1930 and should continue so through 1931.

With rare exceptions refining companies have been able to operate 24 hours a day and 365 days in the year due to the fact that despite depressed conditions and predictions of disaster the refining industry closed the year 1930 with a 5 per cent increase in the demand for gasoline, the principle product of plant operations.

This is in striking contrast with the state of other major industries such as automobiles, lumber, copper, cotton, etc., where demand for their product was from 25 to 75 per cent less than in 1929.

The complete figures of the government are not available for the entire year but, based on the reports for the first 11 months, the demand for gasoline during 1930 approximated 455,000,000 barrels, an increase of slightly less than 25,000,000 barrels over the previous year.

This is less than half of the increase during 1929 over 1928, but was only 10,000,000 barrels under the normal increase for previous years.

Remarkable Record

Certainly no industry needs to look at the future through dark glasses when it can maintain such a record under so abnormal conditions as obtained during the past year.

As one of the outstanding economists remarked recently, the petroleum industry is assured a quick recovery because of the assured demand for its products. Gasoline has come to be one of the necessities of life in this country as much as food and shelter and the demand is least affected by general conditions. This was proved during the past year.

So far as the refining branch is concerned it is unquestionably in better statistical position to enjoy a prosperous year than it was a year ago. According to the latest reports by the American Petroleum Institute stocks of gasoline at the refineries were 4,500,000 barrels less with a decrease of over 10,000,000 barrels in fuel oil and gas oil stocks.

The refiners have reduced their operations, running 250,000 barrels a day less to stills.

In retrospect, it is unfortunate that the refiners as a unit did not realize the expediency of starting to curtail operations earlier last year. If they had done so their branch and the entire industry would have enjoyed a much more prosperous year than they did.

Most Favorable Factor

But developments over the past 90 days have shown that the refiners as an industry have come to appreciate this situation and this is the most favorable factor in the entire oil situation at this time. The advantages which will accrue from this policy are already indicated.

If the refiners will continue their present operations for the next 60 or 90 days there is every assurance they will enter the main gasoline consuming season with stocks in line with requirements and no necessity for dumping excess supplies with resulting disaster to the market structure everywhere.

It is certain, if they will do this, that in the late spring and summer a substantial increase in operations will be justified which will permit them to absorb larger quantities of crude oil.

Just at this time, owing to several uncertain factors, it is particularly difficult to estimate accurately the probable gasoline consumption for 1931. It is exceptionally hazardous in regard to foreign demand as to just what percentage of exports can be obtained in competition with expanding operations of foreign refineries, but it seems reasonable to conclude that the refining industry can expect an increase in gasoline demand which will be from 20,000,000 to 25,000,000 barrels greater than in the year just ended.

With a prolongation of last year's general business conditions it is possible that this estimate would be too high, but with the expected upturn in conditions it is certain that the latter half of the year will see a normal increase in the gasoline consumption of this country.

Gasoline Demand

Figuring on a basis of 20,000,000 barrels increase will mean a total domestic demand, plus exports, of 475,000,000 barrels. It is probable that imports will take care of at least 15,000,000 or 20,000,000 barrels of this demand.

Relative to imports about which there has been considerable discussion it may be pointed out that imports of gasoline increased almost 100 per cent in 1930 over 1929, totaling approximately 17,000,000 barrels, but it is often overlooked that while gasoline imports were doubled imports of crude oil decreased 20 per cent and on a basis of 30 per cent gasoline recovery from imported crude our imports of gasoline and the gasoline content from imported crude were no more than in the previous year. This will probably hold true for the present year.

Taking the maximum estimate for gasoline imports—20,000,000 barrels—and subtracting it from the total estimated demand—there is 455,000,000 barrels to be supplied by the refineries in this country.

In considering this requirement, as has been pointed out in The Oil and Gas Journal from time to time, it is necessary, however, to keep constantly in mind that we are getting more and more of our gasoline supply from sources other than from distillation of crude oil.

Our production of cracked gasoline refined from fuel oil and gas oil approximated 150,356,000 barrels during the first 11 months of 1930 leading to the conclusion that the total output of cracked gasoline for the past year was about 164,000,000 barrels.

This compares with 143,759,000 barrels in 1929 and 122,554,000 barrels in 1928 and 68,583,000 barrels in 1925. In other words, our production of cracked gasoline last year was almost two and one-half times that of only five years ago.

Gain in Cracking

The increase of about 20,000,000 barrels in cracked gasoline in 1930 over 1929 practically took care of our entire increase in total demand. This large gain in production of cracked gasoline largely accounts for the fact that gasoline recovery from crude oil, including natural gasoline blended at the refineries, averaged 47 per cent for the 11 months of last year in contrast with a recovery of only 43.8 per cent in the same period of 1929.

That gain of 3.2 per cent in gasoline yield from crude oil simply means that the petroleum refineries of the United States were thereby enabled to operate with 70,000,000 barrels less crude than they would have had to run to stills on the basis of 1929 gasoline recovery.

Actually it means that 190,000 barrels of crude oil per day were saved by this increase in manufacturing efficiency.

Nor is there any reason to suppose at this time that this refining efficiency will not continue to increase and due to this fact it now appears that the refiners in this country will average 50 per cent gasoline recovery in 1931.

That is, they will produce 21 gallons of gasoline for every 42-gallon barrel of crude oil, during the present year.

To those who may think this is too high attention may be directed to the fact that the same conditions that made for rapid expansion of cracking facilities in the past year will no doubt continue.

The slackening in the demand for the heavier fractions of crude oil resulting from general industrial conditions was an important factor.

Heavier Fractions

Another factor is the displacement of artificial gas by natural gas, lessening the market for gas oil. The expansion of natural gas transportation will make this situation more and more apparent both in regard to industrial consumers and other users of fuel oil.

While some improvement is anticipated during 1931 the price relationship between crude oil and fuel oil was an incentive for further expansion of cracking during the past year. Due to the lessened demand for fuel oil the refiners had no alternative but to provide facilities for cracking this fraction into gasoline and other lighter hydrocarbon products.

Still another phase is the fact that refiners are desirous of increasing their yield of cracked gasoline because of its relatively high antiknock properties and the flexibility of control which it gives them over the distillation properties of their motor fuel. The ready acceptance of premium gasoline high in antiknock value has had its effect on the manufacturing and marketing branches of the oil industry.

With a 50 per cent recovery of gasoline from crude oil 910,000,000 barrels will supply the estimated gasoline requirements for 1931. This would call for approximately 2,493,000 barrels a day run to stills.

Natural Gasoline

In regard to natural gasoline it is assumed that production will be about the same as in 1930 and that the quantities blended at refineries will be approximately the same. For the first time in several years the natural gasoline industry in 1930 had no gain over the previous year.

The production of natural gasoline for 1930 with the last month estimated was 51,800,000 barrels and the output in 1929 was approximately the same. What 1931 will produce will depend directly upon the condition of the crude oil branch of the oil industry.

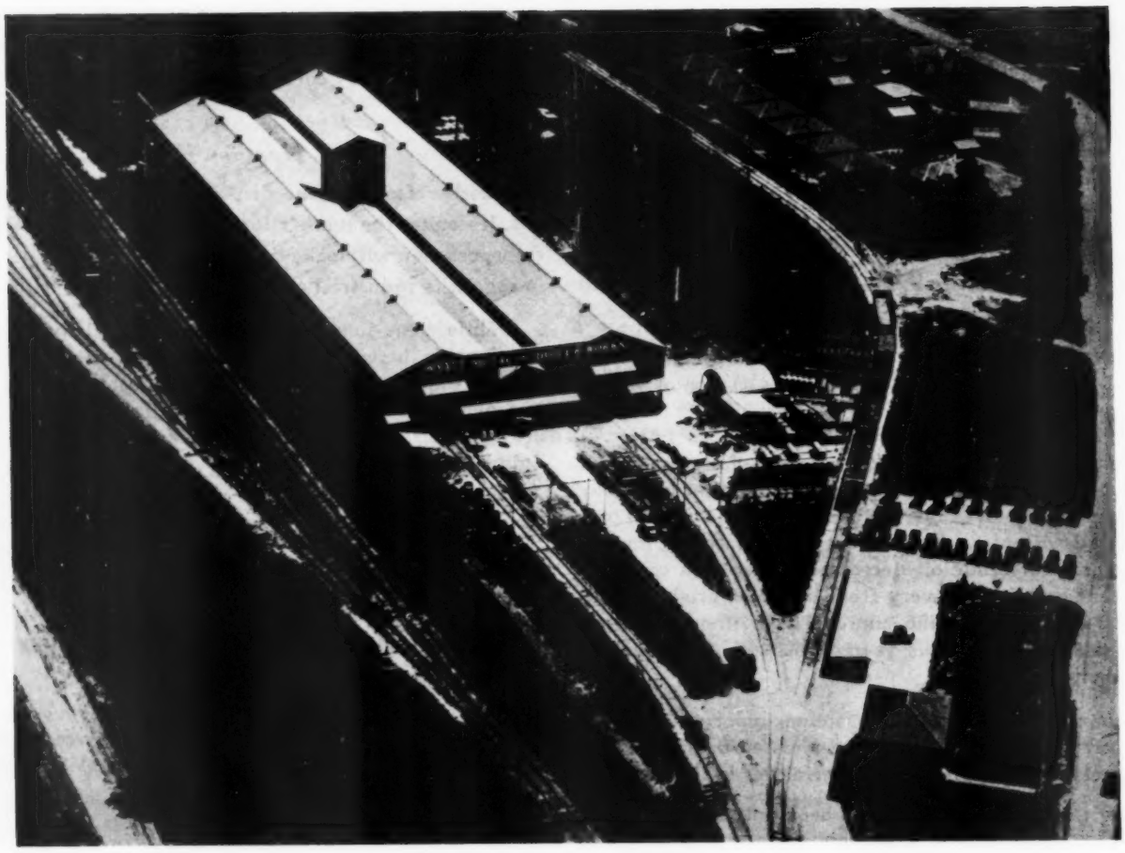
The fact that 1930 did not show a gain over 1929, as already explained, was due to the proration and curtailment policy adopted in several of the flush fields holding back development and restricting the casinghead gas available and this in turn tended to prevent a large increase in the operation of new plants.

This year opened with the expectation that this policy would be continued during 1931 which would mean production of natural gasoline will be confined to actual demand. Any variation in this policy will mean a large increase in the production of natural gasoline in the several flush fields which in one form or another would have to be absorbed in the marketing branch of the industry.

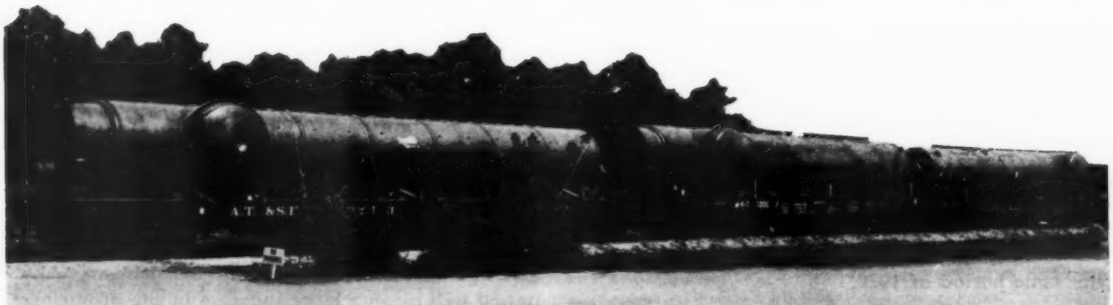
The conclusions to be drawn from a review of the operating figures and conditions in 1930, and very conservative estimates for the present year with similar conditions, present many encouraging factors fully justifying the new confidence that has been manifest in the industry since the turn of the year.

The worst is over.

WYATT has two plants



For quick shipment to any part of the Southwest and to secure full advantage of freight rates on incoming and outgoing tonnage, oil men have two Wyatt plants at their disposal. ◆ The one above is on the S. P. and the M. K. & T. tracks at Houston.



WYATT METAL & BOILER WORKS

PLANTS AT DALLAS AND HOUSTON

to serve the oil industry

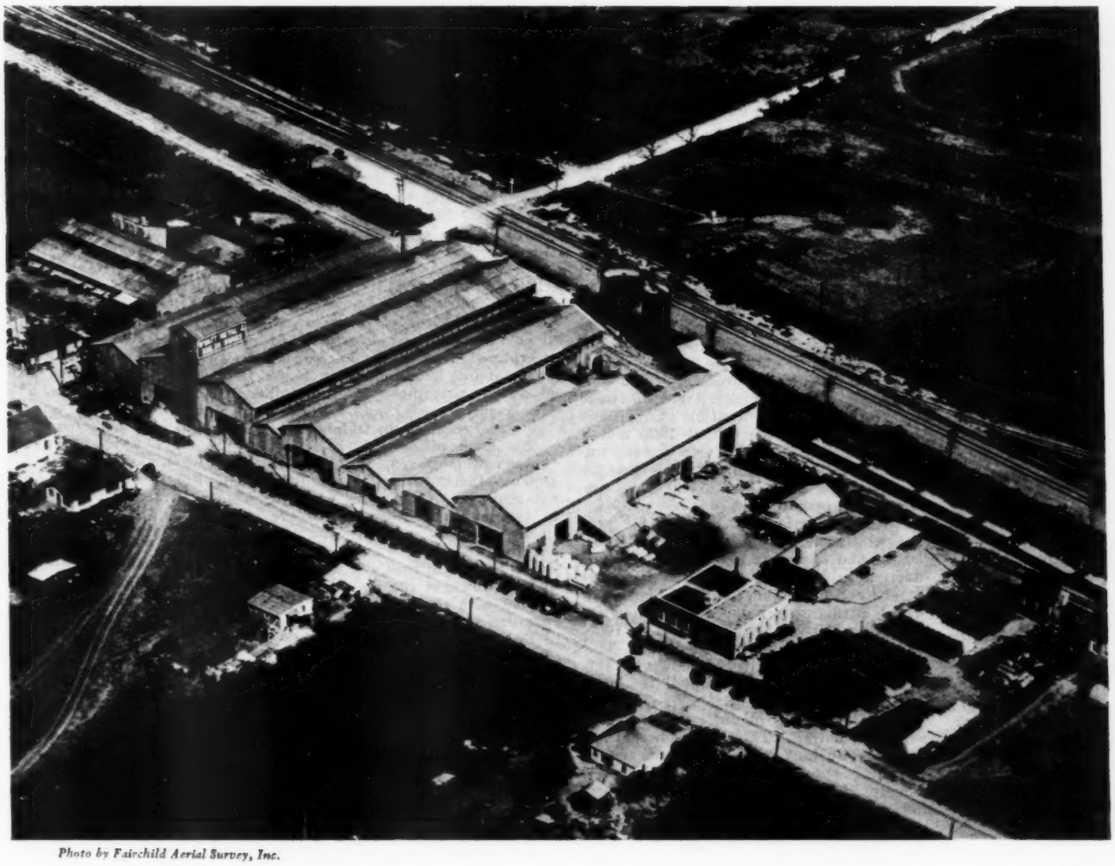
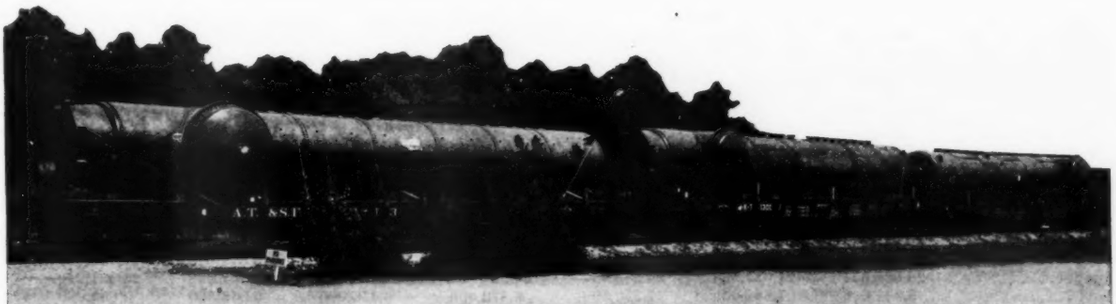


Photo by Fairchild Aerial Survey, Inc.

Two plants facilitate the planning of work and give elasticity in production. This is an advantage in both speed and economy. Both Wyatt plants are modern in equipment. ◆ Above is the Dallas plant, on West Commerce Street. ◆ Capital $1,000,000.



WYATT METAL & BOILER WORKS

PLANTS AT DALLAS AND HOUSTON

Production in 1930 901,740,870 Bbls.

Producers Voluntarily Reduced Their Crude Oil Output in an Effort to Maintain It in Line With Demand

By James McIntyre

The oil fields of the United States were permitted to produce only 901,740,870 bbls. in 1930, or 102,525,853 bbls. less than in 1929, when there was much less restraint on the production of petroleum. What the production would have been had there been no concerted effort at conservation in the ground, no one can definitely say but it would have been hundreds of millions more than the record of 1929.

Relatively few fields in the country in 1930 equaled their production of 1929 and only a few of these showed a large increase over 1929, this latter class of fields having been those which in the early stage of development in 1929. The Oklahoma City Field in Oklahoma; the Hobbs Field in Lea County, New Mexico; the Van Pool in Van Zandt County, Texas; the Darst Creek Field in Southwest Texas, and the Refugio Field in Refugio County, Texas, were principal among the areas showing a large production increase. All of them are fields which were developed more or less last year.

On the other hand older large fields were cut down by producers' agreements, by action of state authorities or both, and we see Santa Fe Springs, California, with a production in 1929 of 76,477,464 bbls. reduced in 1930 to 44,251,396 bbls. The Seminole Field in Oklahoma which produced 101,391,557 bbls. in 1929 yielded only 66,217,239 bbls. in 1930. The Yates Pool in Pecos County, Texas, fell off a little, or from 41,733,955 bbls. to 40,578,656 bbls., while the Hendricks Pool in Winkler County, Texas, fell off from 49,826,190 bbls. in 1929 to 25,925,581 bbls. Long Beach in California, which produced 60,495,555 bbls. in 1929 dropped to 36,599,688 bbls. last year.

In the accompanying table of production by states it will be seen that production fell off in California, Oklahoma, Texas, Arkansas, Wyoming, Illinois, Ohio, Kentucky, West Virginia, Montana, Colorado, and Michigan, while increases are noted in Kansas, Louisiana, Pennsylvania, New York and New Mexico.

Curtailment in California

The greatest drop was in the California fields and this was brought on purely by the application of curtailment measures.

Curtailment work was an important factor in California in 1930 and restriction of production by mutual curtailment and compulsory regulation resulting from enforcement of the gas conservation law will continue to be a factor of paramount importance on the Pacific Coast not only in 1931 but for several years to come as it is imperative that production be kept down to a minimum if any semblance of a price structure is to be maintained. The gas conservation law, if vigorously enforced, should prevent new fields from utterly demoralizing conditions, but the regulatory legislation cannot be considered a panacea for all the difficulties confronting the California oil industry. It should greatly alleviate conditions, however, and make it easier for operators to restrict production and keep it within economic limitations.

California's present curtailment program dates back to October, 1929, although previous to that time a determined effort had been made to reduce crude oil production by mutual co-operative regulation. This first attempt was only partially successful as producers did not appreciate the cumulative menace resulting from chronic overproduction and consequently did not make a conscientious effort to meet the situation. Conditions became acute in the fall of 1929 and a definite policy for 1930 was decided on. Oil men established an allowable production for the State of 696,000 bbls. per day and appointed an umpire with instructions to enforce compliance.

Curtailment orders were immediately issued and operators began reducing production in November, 1929. During October the State produced 867,586 bbls. per day but this was reduced the following month to 710,585 bbls. and then to 700,179 bbls. per day in December, 1929. The inability to get production down to the established allowable prompted the general committee to authorize a six-day flow test of flush fields in order to determine actual potentials. This test showed that Santa Fe Springs had slid out from under its rated potential about 30 days previously. Long Beach and several other fields also failed to reach their rated potentials. Elwood was about the only field which exceeded its potential. Ventura was also given credit for reaching its potential although actual production was below the objective as it was not feasible to conduct a full six-day flow test off all wells in that field because of excessive gas pressures. A second economic survey was made and it was decided that a further reduction in production was necessary. The operators' general committee, in accordance with the findings, set 625,000 bbls. per day as the new maximum allowable effective February 15, 1930. A month of two later the allowable was reduced to 609,000 bbls. per day and a further reduction to 575,000 bbls. per day was made in June, 1930.

Look Out for Future

Extension of the general business depression and an obligatory reduction in intercoastal shipments to the East Coast because of a drastic decline in gasoline prices forced California operators to effect a further restriction in production. In September, 1930, the operators' general committee on curtailment accordingly reduced California's maximum allowable production to 540,000 bbls. per day. Effective December 18, 1930, the State's allowable daily production was reduced to 500,000 bbls. per day and it is believed that this program will afford sufficient relief to enable refiners to cope with conditions by the time Kettleman Hills and other prolific Temblor fields go on a regular production schedule. State production has never yet been reduced to the maximum allowable established by the operators' general committee but, notwithstanding the failure to reach these objectives, curtailment work in California has been successful.

Proration in Oklahoma

The good offices of the Federal Oil Conservation Board, the American Petroleum Institute and the Mid-Continent Oil and Gas Association were extended in the movement to conserve excess oil in its natural reservoir, and the Oklahoma Corporation Commission and the Texas State Railroad Commission, backed by such laws as the two states afforded, worked with the producers in production curtailment throughout the year. Late in 1929 a survey was made of conditions of the oil business in Oklahoma looking forward to March 31, 1930, and it was found that while Oklahoma could produce 799,000 bbls. per day in January; 850,000 bbls. per day in February and 922,000 bbls. per day in March, the purchasers of oil could only see a market for an average of 641,000 bbls. in January; 670,000 bbls. in February and 671,000 bbls. in March, and production was fixed at these demand figures. The market estimates proved to be too high. The estimate on the second quarter showed a potential production of 1,448,000 bbls. a day in April, 1,715,000 bbls. a day in May and 1,800,000 bbls. per day in June, and production was limited to 600,000 bbls. per day plus any increase in demand, which was to be allotted to the Oklahoma City Field. The potential production estimate for the third quarter was 1,362,000 bbls. per day in July, 1,348,000 bbls. per day in August and 1,306,000 bbls. per day in September, with an estimated demand of 650,000 bbls. These estimates were revised soon after having been made and the potentials made 1,400,000 bbls. in July, 1,353,000 bbls. per day in August and 1,481,000 bbls. per day in September, with the demand decreased to 550,000 bbls. per day. For the last quarter of the year, the "rated" potential for October was placed at 3,639,000 bbls. per day; November 4,143,000 bbls. and December 4,244,000 bbls. with a demand of only 550,000 bbls. per day in October; 545,000 bbls. in November, and 535,000 bbls. per day in December.

State Co-operation

The Corporation Commission throughout the year issued curtailment orders in line with the recommendations of the proration committee of the Mid-Continent Oil and Gas Association, with the approval of the operators in the fields affected. It was found that the estimates on crude demand were high throughout the year and it was found necessary to pair down production almost every week in order to keep it in line with demand. The average production in January was 671,064 bbls., and this had slipped to 616,626 bbls. per day in April. Then production jumped upward to 658,490 bbls. per day in June. But July saw output drop sharply to 581,694 bbls. per day. In December the average had fallen to 485,713 bbls. per day with an average for the whole year of 592,095 bbls. per day.

Continued in 1931

Producers bent on continuing the proration movement in 1931 petitioned the Corporation Commission for an order covering the first three months of this year and received an order curtailing crude output to demand. The rated potential of the State in the first three months of 1931 was placed at 6,252,000 bbls. in January; 6,686,564 bbls. per day in February and 7,263,077 bbls. in March.

Rated potential, it must be understood, is based on estimated one-day production. It has little relation to what the possible potential production would be over a period of say three months. It is simply a thing from which to compute allowable production on a percentage basis. No one has any idea that Oklahoma could produce 6,252,000 bbls. per day for more than one day, and if it were permitted to produce wide open in all fields the potential estimates for February and March could be thrown to the winds. However, the actual potential production of Oklahoma covering a three-month period would be so great that the pipe lines could not handle it. Oil would flow down the rivers and creeks and cover the ground.

The estimated demand for oil in the first three months of the year was found to be as follows: January, maximum demand 500,095 bbls. per day, minimum

(Continued on Page 148)

PRODUCTION IN THE UNITED STATES: 1924 TO 1930, INCLUSIVE

	1924 (bbls.)	1925 (bbls.)	1926 (bbls.)	1927 (bbls.)	1928 (bbls.)	1929 (bbls.)	1930 (bbls.)	No. active wells Dec. 31, 1930	Daily ave. prod. per well (bbls.)
California	230,063,117	230,147,342	224,117,013	230,751,463	231,982,597	292,036,911	228,091,899	9,454	66.1
Oklahoma	176,206,397	173,270,063	177,651,198	276,022,024	247,500,851	252,229,474	216,114,591	60,770	9.8
Texas	135,361,378	144,783,451	172,545,278	220,030,512	255,354,357	298,713,694	292,392,102	34,735	23.1
Arkansas	48,167,912	78,407,138	58,729,606	40,411,375	32,137,934	25,443,570	20,114,782	3,929	14.0
Kansas	29,671,551	38,151,622	41,346,511	41,943,577	38,150,878	40,658,170	42,123,347	20,438	5.7
Wyoming	39,251,070	29,229,303	25,465,553	20,983,675	21,403,460	19,071,618	17,740,017	3,511	13.9
Louisiana	20,638,051	21,537,564	24,283,144	24,330,954	22,862,564	21,137,263	23,881,270	4,032	16.2
Illinois	8,041,000	7,862,000	7,770,500	6,873,000	6,475,000	6,356,500	5,651,000	16,100	1.0
Pennsylvania	7,529,100	7,831,200	8,971,200	9,642,000	9,914,000	11,804,800	12,918,000	79,050	0.4
Ohio	6,797,000	7,175,000	7,307,500	7,542,500	7,105,000	6,730,200	6,483,000	38,800	0.5
Kentucky	7,396,900	6,770,000	6,297,200	6,590,000	7,350,000	7,821,400	7,462,000	19,000	1.1
West Virginia	5,924,000	5,780,000	5,962,400	6,033,000	5,746,000	5,608,600	5,111,000	16,900	0.8
Montana	2,785,724	4,122,653	7,744,605	5,171,883	3,998,549	3,827,067	3,203,808	1,426	6.2
New York	1,482,000	1,660,000	1,934,200	2,237,000	2,579,000	3,345,600	3,854,000	15,300	0.7
Colorado	391,922	1,171,625	2,776,442	2,722,670	2,744,184	2,361,595	1,623,639	219	21.6
New Mexico	81,800	1,096,617	1,695,645	1,214,254	973,891	1,803,261	10,377,415	431	65.1
Indiana	936,000	828,000	785,200	852,500	1,054,000	905,800	990,000	2,600	1.0
Tennessee	6,300	23,000	44,200	62,200	50,000	20,000	20,000	.....	...
Michigan	.....	.....	103,000	436,100	613,000	4,391,200	3,589,000	573	17.1
Miscellaneous	.....	.....	30,780	.....	.....	.....	.....	.....	...
Total	720,731,222	759,846,578	775,561,175	903,850,687	897,995,265	1,004,266,723	901,740,870	327,268	7.6

Low Quotations on Refined Products

Refiners in 1930 Secured Exceptionally Low Prices for the Bulk of Their Plant Output. Rapid Decline in Lubricants

By C. O. Willson

Petroleum refiners in United States operating approximately 350 plants in 1930 secured the lowest average prices for most of their products since 1917.

Price trends were a continuance of declines which got under way the previous year. Refiners entered the year with a weak market and considered as a unit they were never able to stop this trend except for brief periods and the year ended with most products at the low point of the 12-month period.

This unwanted situation is explained as being due to developments in both supply and demand. On the demand side, refiners had an increase in gasoline, their principal product, although less than the average gain of previous years. Final figures for the year are not available but data for the first 11 months indicate that the 1930 increase over 1929 will not be more than 5 per cent. This contrasts with gains of from 8 to 22 per cent in normal years.

The demand for the other principal products—kerosene, fuels, lubricants and wax—was less than in 1929. The small gain in gasoline and the decrease in the other products is explained as due to a generally depressed business condition both in United States and foreign countries. In regard to the latter, the expansion of refining facilities in other countries was a contributing factor, refiners in United States being faced with additional competition in disposing of their products through export channels.

Probably the most important decline in demand was for the heavier oils used as fuel by industries, public utilities and the marine trade. The industrial demand fell off due to the closing down of plants and the other outlets were not as active as in 1929. This situation was important not only because it brought lower prices for all products sold as fuel at refineries but also because of the impetus it gave to the expansion of cracking facilities at refineries.

Expansion in Cracking

In order to get rid of fuel oil and because of the relative low prices prevailing in relation to crude oil, many refiners found it expedient to expand their cracking operations with the result that there was a record increase in the production of cracked gasoline at refineries. From the gasoline marketing end, this tended to nullify the importance of curtailed schedules in other phases of plant operation reflected in the data which show that crude oil runs to stills for the entire United States were less in 1930 than in 1929. Due to this development the refining industry over practically the entire year was burdened with excessive stocks of motor fuels and did not have that equilibrium between supply and demand which assures a favorable market.

The fact that crude oil runs to stills were curtailed no doubt prevented a large surplus of kerosene. However, the decrease in output was not as great as the decline in the domestic and export demand and the market for this product was also burdened with excess supplies over a greater part of the year.

Lubricants and wax which may be considered from the market angle as by-products of the main refinery operations were overproduced and with a lessened demand refiners of these products ended the year with prices at exceptionally low levels. The decline in exports was the principal cause of the unfavorable market situation in these products. Approximately one-third of the output of lubricants at refineries in United States is normally sold through export channels and 60 per cent of the wax output so that foreign market conditions are especially important in the disposal of these products.

Gasoline

East of the West Coast the "up and down" of the gasoline market was similar to that of the past several years. Nineteen hundred twenty-nine closed with a weak market and this was followed with more price declines early in 1930. The price situation began to improve in March and aided with a crude oil increase in the Mid-Continent Field in April, prices advanced to the high point of the year in the latter part of that month. It was hoped that a favorable market was assured for the remainder of the spring and summer months.

It became apparent in early May that this advance could not be maintained and prices again started to decline. The market as a whole never recovered from this slump and price changes through the summer and fall months were generally downward. Heavy gasoline stocks coupled with a feeling that the larger potential production of crude oil was a threat to the market, nullified the constructive efforts made to improve market conditions and a steady liquidation was carried on over the last eight months of the year.

In Oklahoma, 58-60 U. S. Motor gasoline, the principal open market quotation of the refining industry, fluctuated between a low of 4 cents and a high of 7½ cents. The year started with the price slightly under 7 cents, based on the weighted average sales of the larger refiners in the State. Sales of other refiners were one-half cent under this high quotation. The market continued weak during January, February and most of March. The market stiffened at that time and by the latter part of April had advanced to 7½ cents.

In May, export purchases in the Mid-Continent decreased in volume and more material was available on the spot domestic market. Prices began to soften again the latter part of May. Prices settled around a high of 6½ cents during the summer months, the season of maximum consumption. However, there was plenty of material available from smaller refiners from one-half to three-fourths cents under the 6½-cent level.

During the fall months there was an additional price weakness. Many of the larger refiners in the State did not reduce their quotation on the U. S. Motor grade below 5 cents. However, the same grade was sold as low as 3½ cents by other refiners during December, the lowest price since 1915 and 1916.

The average price on this grade in Oklahoma the first half year was 5.84 cents per gallon, 6.88 cents per gallon the second half and 6.34 cents for the entire year. This compares with an average of 7.75 cents for 1929 and 7.95 cents for 1928. As shown in the accompanying table, the 1930 average was lower than during any of the previous seven years. Comparable records for previous years show that this was the lowest yearly price since 1916 in Oklahoma.

The market situation in Oklahoma U. S. Motor gasoline is representative of the same grade in other Mid-Continent and Middle Western areas. This product is sold under highly competitive conditions and price declines or advances in Oklahoma are quickly reflected in all other interior refining groups extending from the Rocky Mountains to the Appalachian Mountains on the east.

In North Texas the U. S. Motor gasoline brought an average price of 5.72 cents for 1930 with a high of 7 cents and a low of 4 cents. In 1929 the average price in that area was 7.56 cents per gallon and in 1928, 7.69 cents.

The same situation obtained in Pennsylvania where refiners had an average price of 7.37 cents for their U. S. Motor gasoline. In 1929, the same grade brought an average price of 9.05 cents and in 1928, 9.82 cents. Pennsylvania refineries were favored with exceptionally low prices for crude oil.

Although the week-to-week developments were not the same as in the interior refining groups, the Gulf Coast and East Coast markets followed the same general trends as to prices. The Bayonne, N. J., U. S. Motor gasoline, which is representative of the coastal situation, started the year at 8⅝ cents. Prices were reduced to a low of 8¼ cents in early March. Prices then started to recover and by the middle of May a 9-cent level had been established. This continued through June when prices began to reflect the drop in the Mid-Continent market. Prices declined rapidly in the fall months and this grade was quoted at a low of 6¼ cents in December.

The average for U. S. Motor gasoline at Bayonne for 1930 was 8.07 cents. The average in 1929 was 9.04 cents and in 1928, 10.2 cents.

The California situation in regard to gasoline differed slightly from other areas. Crude oil prices on the West Coast were maintained closer to their 1929 levels than in the fields east of the Rocky Mountains and refiners were slower in reducing their gasoline prices. The average price for 54-58 437 endpoint in California for local delivery was 8.06 cents and in 1929, 8.89 cents. The California price fluctuated due to price wars in the tank wagon and retail markets and in early July, the U. S. Motor was quoted at a low of 5½ cents. The product was recovered from this level but later in the year again slumped closing the year at a low of 6½ cents.

Export Gasoline

The export situation in regard to gasoline followed the domestic trend. The larger exporters all of which were affiliated with the Export Petroleum Association, Inc., maintained uniform prices at coastal points throughout the first eight months of the year. At the same time there was considerable export buying by independent purchasers at prices under the association prices. This finally resulted in a collapse in the association prices and quotations dropped rapidly over the remainder of the year.

At the Gulf Coast, a price of 9½ cents was maintained for several months in the 64-66 375 grade. This price slumped in November and December and closed the year at 5¾ cents.

Burning Oils

Burning oils labored under a depressed market throughout all of 1930. The domestic demand was slightly less than the year before with a large drop in exports which normally absorb approximately one-third of the refinery output in this country.

The 41-43 water white kerosene which is the principal grade sold in United States and foreign countries fluctuated between a low of 3 cents and a high of 4¼ cents in Oklahoma during 1930 with

(Continued on Page 148)

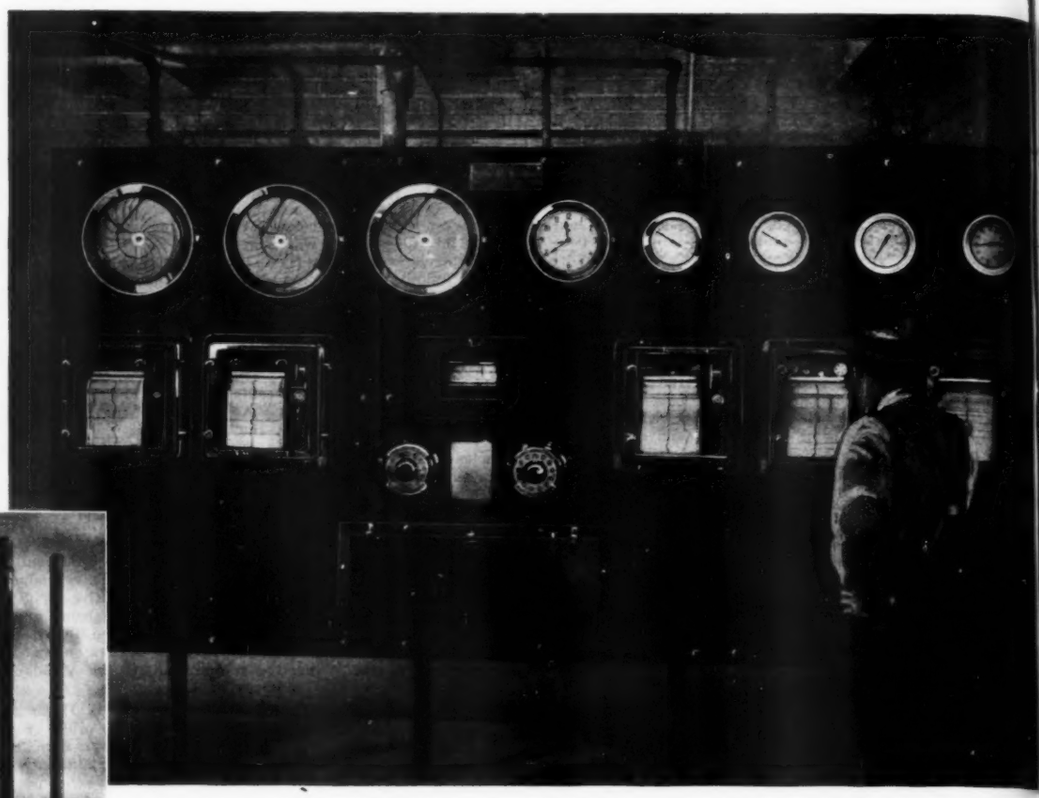
AVERAGE PRICES CRUDE OIL AND REFINED PRODUCTS

	1930	1929	1928	1927	1926	1925	1924	1923
OKLAHOMA—CRUDE OIL								
36 A.P.I. gravity, per bbl.*	$1.23	$1.37	$1.31	$1.38	$2.13	$1.87	$1.63	$1.56
OKLAHOMA—REFINED PRODUCTS								
58-60 U. S. Motor Gasoline, per gal.	.0634	.0775	.0795	.0667	.1031	.1055	.0896	.0978
Grade A, 72-79.9, 375 e.p., rec. 90%, natural gasoline, per gal.	.0536	.0706	.0744	.0585	.0946	.1202	.0866	.0913
41-43, water white kerosene, per gal.	.0358	.0517	.0517	.0461	.0727	.0445	.0449	.04
24-26 fuel oil, per bbl.	.7043	.706	.7694	.9792	1.3072	1.0908	.954	.9511
32-36 gas oil, per gal. (industrial)	.0227	.0265	.0247	.0299	.0419	.0368	.0291	.0266
200 vis., 3 color, 23-28 cold test neutral oil, per gal	.1059	.0966	.0947	.1032	.1072	.1139	.1308	.1317
124-126 wax, per lb.	.0216	.0321	.0394	.0294	.0471	.0516	.0446	.0254
150-160 D color bright stock	.2977	.3368	.2310	.....	.....	.....	.....	.....
	PENNSYLVANIA—CRUDE OIL							
	1930	1929	1928	1927	1926	1925	1924	1923
Bradford crude oil in National Transit Lines, per bbl.	$2.55	$3.69	$2.98	$2.87	$3.51	$3.50	$3.60	$3.33
PENNSYLVANIA—REFINED PRODUCTS								
58-60 U. S. Motor gasoline, per gal.	.0737	.0905	.0982	.09	.1273	.1348	.1224	.1352
43 prime white kerosene, per gal.	.0501	.0651	.0635	.0646	.0885	.0956	.0671	.0652
30-34 fuel oil, per gal.	.0386	.0441	.0449	.0477	.0591	.053	.0527	.054
Pennsylvania bright stock, per gal.	.0373	.4745	.3186	.3326	.3954	.3824	.3655	.3337
	CALIFORNIA—CRUDE OIL							
	1930	1929	1928	1927	1926	1925	1924	1923
25 A.P.I. gravity, Long Beach, per bbl.	$1.16	$1.05	$ .96	$1.00	$1.37	$1.35	$1.06	$ .74
CALIFORNIA—REFINED PRODUCTS								
58-60 U. S. Motor gasoline, per gal.	.0806	.0849	.0919	.0873	.1134			
75-78, 375-390 e.p., natural gasoline, per gal.	.0712	.0803	.0726	.093	.1465			
38-40 kerosene, per gal.	.0455	.0569	.0611	.07	.0745			
15-20 fuel oil at tidewater, per bbl.	.6346	.6724	.8892	.9221	.9813			

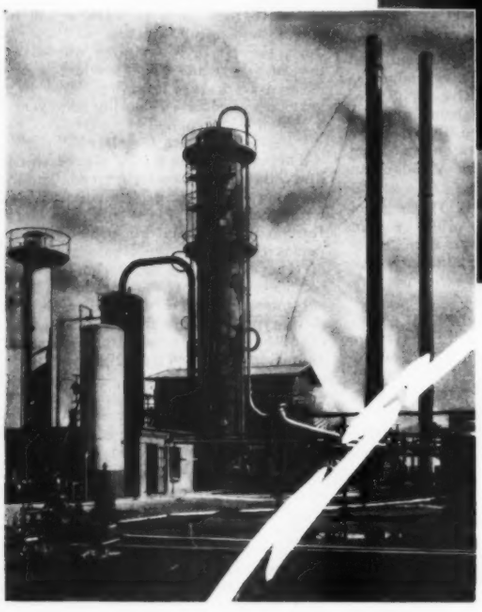
Average prices on refined products for 1925, 1924 and 1923 on comparable basis not available.

*Based on posted price for Oklahoma, Kansas and North Texas.

Note: Average price on refined products are based on low quotations as published weekly in The Oil and Gas Journal. Crude prices are daily averages based on posted schedules of major buyers.



Control Board showing Brown Recording and Control Instruments used in operating the Winkler-Koch Pipe Still at Enid, Okla., plant of the Champlin Refining Company.



Winkler-Koch Pipe Still at Enid, Okla., plant of the Champlin Refining Company.

Champlin Refining C
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TEMPERATURE, pressure, flow, liquid level —any of these quantities on any refinery operation can be handled by Brown indicating, recording and automatic control instruments.

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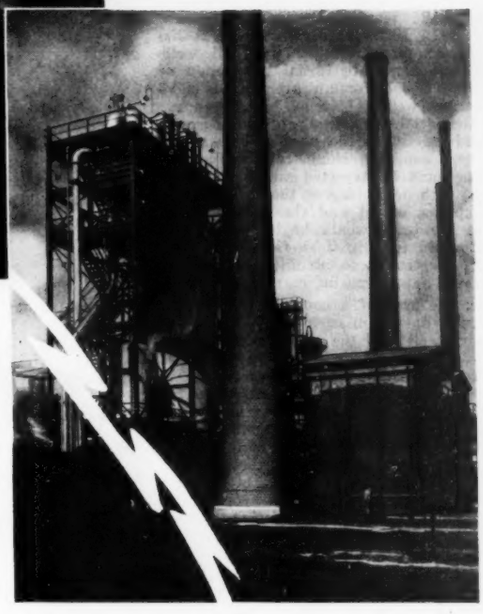
To Measur

Control Board showing Brown Recording and Control Instruments, used in operating the Cross Cracking Still at the Enid, Okla., plant of the Champlin Refining Company.



Cross Cracking Unit at the Enid, Okla., plant of the Champlin Refining Company.

Company says: "OK the installation"

equipment, to the advantage of the owner and to the credit of the builder.

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New Initial Production Mark in 1930

Enormous Flush Wells in a Few New Fields Brought Total Up to 9,955,835 Bbls., Average of 855 Bbls. Per Well

By James McIntyre

Enormous initial production of wells in the Oklahoma City Field, in Oklahoma; Hobbs in Lea County, New Mexico and Van in Van Zandt County, Texas, were mainly responsible for a record breaking total initial production in the United States in 1930. In all, 21,232 wells were drilled last year of which 11,640 were oil wells with an initial production aggregating 9,955,835 bbls., an average of 855.3 bbls. per well. The record for aver age big initial producers in past years was held by the year 1928, when a figure of 667.9 bbls. per well was reached. made possible largely by the wells of West Texas.

Last year's total of wells completed was 5,124 fewer than in the previous year. In 1929 out of a total of 26,356 wells completed, 15,572 were oil wells with an aggregate initial production of 6,170,311 bbls. or an average of 396.3 bbls. per well.

The drop in drilling operations was noted chiefly in the host of older pools in the country where relatively small wells could be expected and which were not worth developing at the current market prices of oil and the constant fear that the price would be lowered if operators in the big flush fields broke up their agreements to curtail production to a figure approximating market demand.

In the case of a considerable number of pools opened in various states the discovery well was the only one drilled in the course of the year because of the depressed conditions prevalent not only in the oil business but in general industry.

Pools that ordinarily would have been bee hives of activity are standing undeveloped until better conditions are in sight, the hope being that these better conditions will become a part of the picture presented by 1931.

The unitization of pools in Texas and Oklahoma also kept down drilling. In fact Oklahoma City was the only field in the country where drilling was unrestrained and this situation was accentuated by the fact that a part of the Oklahoma City Field lies under the city itself which brought on a campaign of town lot drilling on "leases" of 100'x150' or even smaller.

Large Cost of Wells

It is reasonable to believe that much more capital was invested in drilling operations last year than in 1929. The 628 wells completed in Oklahoma County, Oklahoma, last year cost no less than $94,000,000, which sum would be sufficient to complete 6,000 wells on a basis of costs of drilling the Smackover Field in Arkansas or the Powell Field in Texas. Not many wells were completed in Kettleman Hills, Calif., but they cost $250,000 or thereabouts each. The Hobbs Pool in Lea County, New Mexico, requires the expenditure of from $50,000 upward to complete a well and wildcats in Lea County last year cost as high as $100,000 owing to difficulties of various kinds met with in the operation.

The decline in drilling in the fields east of the Mississippi River where the cost is comparatively light but the average returns very small accounted for 2,895 of the 5,124 well drop in completions, and the shallow North Central Texas area accounted for 1,196 more. Kansas about held its own in field activity compared with 1929 and in Oklahoma only 147 fewer wells were drilled last year than in 1929. East Central Texas had a revival of field work and 320 wells were completed in that territory as compared with 159 the year before. The oil wells numbered 182 and they averaged 3,498 bbls. per well in initial production. New Mexico also had its busiest year thus far and 162 oil wells were drilled out of a total of 209 completions, an increase of 90 wells over 1929. The initial production of 1,099,268 bbls. represented 6,785.6 bbls. per well. North Louisiana completed 746 wells as against 612 in 1929 and Wyoming completed 152 as against 135 in the previous year. In the Texas Panhandle 587 completions indicated an increase over the previous year of 27 and Southwest Texas showed no signs of a slump with its 1,196 completed wells, an increase of 57 over 1929.

Californians kept their completions down to 1,009 a decline of 115 compared with the record of 1929. The effort to keep daily production down to demand kept operators from drilling the known flush oil areas.

Few Fields Stand Out

In looking over the year's completion reports a few fields stand out prominently in the matter of big new wells. Leading them all is the Oklahoma City Field in Oklahoma with 591 new oil wells with an initial production of 4,813,270 bbls., an average of 8,144 bbls. per well. Many of these wells did not flow a complete 24 hours and in this report they are credited only with the quantity of oil they produced within the first 24-hour period. In Seminole and Pottawatomie Counties, Oklahoma, in which the Greater Seminole Field is located 571 new oil wells were completed producing 653,737 bbls., an average of 1,145 bbls. per well. In the Elwood, Calif., field, 31 wells produced 122,312 bbls. the first day an average of 3,946 bbls. per well, and 6 new wells in Kettleman Hills, 33,668 bbls., an average of 3,651 bbls. per well. In McPherson County, Kans., where the Voshell and Ritz Pools are, 139 new oil wells produced 151,262 bbls. initially, averaging 1,080 bbls. per well. The Van Pool in Van Zandt, Tex., with 171 new oil wells recorded 618,453 bbls. initial production, an average of 3,617 bbls. per well, and the recently discovered Rusk County, East Texas, field with two wells completed last year scored an initial production of 15,560 bbls. or 5,187 bbls. per well. The Lea County, New Mexico, field, the home of the Hobbs Pool and discoveries of last year, recorded an initial production of 1,098,722 bbls. from 154 new oil wells, an average of 7,134 bbls., rivalling Oklahoma City. The Darst Creek Field in Guadalupe County, Southwest Texas, with 230 oil wells finished last year registered a total initial production of 318,747 bbls., or 1,386 bbls. per well. Other counties or pools that averaged over 1,000 bbls. per well in initial production last year included Lincoln County, Oklahoma, 1,955 bbls.; Pecos County, Texas, 1,261 bbls.; Bruner, Tex., 1,233 bbls.

Fourteen fields with 2,114 new wells were responsible for 8,108,509 bbls. initial production, an average of 3,806 bbls. per well, while in all the many hundreds of scattered pools in the country 19,118 completions of 1930 were responsible for only 1,847,326 bbls., an average of 97 bbls. per well, and of these 4,192 wells in the fields east of the Mississippi River, produced initially only 106,007 bbls., or 25 bbls. to the well.

Less than 10 per cent of the wells completed were responsible for over 81 per cent of the new production brought to the surface by last year's completions. It is fortunate, however, that this new production was curtailed last year, and in some cases shut in entirely a part of the time because of lack of demand. When the new year opened a vast quantity of new potential production was below ground with preparations made to permit it to be drawn when required.

Tremendous Potential

It was estimated toward the close of the year that if all the wells in the United States were opened wide they could produce over 11,000,000 bbls. for one day and over 5,000,000 bbls. for a considerable period. The very high average initial production per well last year was responsible to a great degree for this situation. A rigid system of curtailment and proration in California, Oklahoma and Texas kept many wells of last year's crop of wells shut in much of the time, in some cases from 50 to 85 per cent of the time, which kept production down to about 50 per cent of what the country's wells could have maintained if there had been a market for the oil.

The year was not remarkable for the number of its discoveries, Hobbs might be said to have been a 1930 discovery but showings of oil had been found thereabouts in past years. The first big well in the area was completed by the Humble Oil & Refining Co. last year, which led to the real development of the pool.

Perhaps the most important of 1930 discoveries was that of finding oil in Rusk County, East Central Texas, which has brought a renewal of life to that part of the State in so far as oil is concerned. Competent judges in Texas declare that the discoveries in Rusk County have opened what promises to be the largest field in the United States, in area at least. It may be made up of scattered pools, just as the Greater Seminole Field is constituted. So much of the territory is owned by individuals and companies with limited capital that at the opening of the new year the new field was looked

(Continued on Page 144)

SUMMARY OF COMPLETED WORKS IN ALL THE FIELDS OF THE UNITED STATES IN 1930 AND 1929

		Comp.	Initial prod. (bbls.)	Dry holes	Gas wells	Oil wells	Ave. int. prod. (bbls.)
Eastern	1930	3,874	20,442	438	667	2,769	7.4
	1929	5,887	27,220	452	808	4,727	5.8
Central Ohio	1930	1,129	14,888	342	440	347	42.9
	1929	1,382	11,465	377	583	422	27.2
Lima	1930	205	1,663	39	72	94	17.7
	1929	191	3,717	40	25	126	29.5
Indiana	1930	215	2,498	79	55	81	30.8
	1929	181	1,826	78	36	67	27.3
Kentucky-Tennessee	1930	1,122	37,745	320	169	633	59.6
	1929	1,392	50,225	409	82	901	55.7
Michigan	1930	295	25,729	115	29	151	170.4
	1929	503	127,906	124	31	348	367.5
Mississippi	1930	60	100	28	31	1	100.0
	1929	23	.....	22	1	...	....
Alabama	1930	....	.....	...	...	...	....
	1929	2	.....	2	...	...	....
Illinois	1930	204	3,042	84	3	117	26.0
	1929	403	16,023	87	2	314	51.0
Kansas	1930	1,036	228,296	423	168	445	513.0
	1929	1,058	165,611	453	52	553	299.4
Oklahoma	1930	3,466	5,628,334	1,002	403	2,061	2,730.8
	1929	3,613	1,178,945	1,245	369	1,999	589.7
North Central Texas	1930	2,909	138,500	1,624	133	1,152	120.2
	1929	4,105	198,397	1,991	147	1,967	100.8
East Central Texas	1930	320	636,650	132	6	182	3,498.1
	1929	159	11,424	136	6	17	672.0
East Texas	1930	37	.....	8	29	...	....
	1929	98	190	21	74	3	63.3
West Texas	1930	733	357,669	233	5	495	723.4
	1929	1,116	1,886,226	389	12	715	2,638.1
Panhandle	1930	587	178,878	72	172	343	521.6
	1929	560	278,953	70	139	351	794.7
Gulf Coast	1930	1,361	475,029	497	44	820	579.3
	1929	1,733	603,753	648	64	1,021	591.3
Southwest Texas	1930	1,193	430,393	512	95	586	734.5
	1929	1,136	187,144	472	143	521	359.2
North Louisiana	1930	746	55,257	279	254	213	259.4
	1929	612	29,549	184	281	147	201.0
Arkansas	1930	127	6,214	69	12	46	135.0
	1929	245	19,593	123	19	103	190.2
Montana	1930	182	5,791	68	40	74	78.2
	1929	373	11,829	94	66	213	55.5
Wyoming	1930	152	24,059	35	17	100	240.6
	1929	135	34,872	44	9	82	425.4
Colorado	1930	57	969	34	10	13	74.5
	1929	98	4,882	60	5	33	147.9
New Mexico	1930	209	1,099,268	36	11	162	6,785.6
	1929	119	13,065	71	16	32	408.3
Utah	1930	4	.....	3	1	...	....
	1929	8	.....	8	...	...	....
California	1930	1,009	584,521	254	...	755	774.2
	1929	1,224	1,307,496	314	...	910	1,436.8
Total	1930	21,232	9,955,835	6,726	2,866	11,640	855.3
Total	1929	26,356	6,170,311	7,914	2,870	15,572	396.3
Difference		5,124	3,785,524	1,188	4	3,932	459.0

Record of Past 10 Years

Total	1930	21,232	9,955,835	6,726	2,866	11,640	855.3
Total	1929	26,356	6,170,311	7,914	2,870	15,572	396.3
Total	1928	22,331	8,365,778	7,078	2,727	12,526	667.9
Total	1927	24,143	4,918,197	7,210	2,491	14,442	340.4
Total	1926	29,319	3,683,787	7,965	2,341	19,013	193.7
Total	1925	25,623	4,300,356	6,735	2,330	16,558	260.0
Total	1924	21,894	3,255,491	4,950	2,173	14,771	221.0
Total	1923	23,438	6,105,160	5,883	2,349	16,206	371.0
Total	1922	24,658	4,226,119	5,329	2,011	17,318	244.0
Total	1921	21,775	2,827,809	5,013	2,135	14,627	193.0

Gasoline Tank Wagon Prices at New Low

Steady Decline Last Half of Year Reflected in Average Prices for 50 Cities. Average Tax Increases

By R. C. Conine

Fluctuating within a wide margin, gasoline tank wagon prices during 1930 went into a steady decline after June 1, and on December 31 had passed the low mark reached in 1923. At the close of 1930 the average price in The Oil and Gas Journal's 50 representative cities stood at 13.2 cents, free of tax, or 2.34 cents below the average price at the close of 1929.

Prices dropped most sharply in February and October, when the averages showed losses of nearly 1 cent. On February 1, the price average was 15.36 cents, and on March 1 it had fallen to 14.54 cents. On October 1, the average price was 14.25 cents, and on November 1 the price stood at 13.76 cents. The sharp decline noted in the early part of the year is attributable to price cutting in many of the principal cities which followed a move on the part of a few marketers to increase their gallonage, and the increased activity of railroad siding service stations where prices were maintained from 2 to 3 cents below the general market.

General reductions made during the latter part of September are responsible for the precipitous drop in October's average price. On September 29, the Standard Oil Co. of New Jersey posted a general reduction of 2 cents, and on the same date the Standard Oil Co. of Indiana posted a similar reduction, and the Standard Oil Co. of Nebraska reduced its price 2 cents throughout the State.

On October 1, the Continental Oil Co. made a general reduction throughout Colorado, Wyoming and Montana. The Standard Oil Co. of Louisiana on October 2 posted a general reduction throughout its territory. On October 25, the Standard Oil Co. of Kentucky made sweeping changes in its territory.

In the Atlantic and New England states a general reduction of 1 cent was posted by the Atlantic Refining Co. for the points not previously affected by cuts.

West Coast Situation

The abnormal situation in the western coast states, where prices have increased in the face of general reductions in the other states, became more marked toward the close of 1930 when the average price, free of tax, had reached 19.66 cents, an increase of 2.33 cents over the 1929 average price, and an increase of 5.36 cents over that recorded at the close of 1928.

In the other districts the price decreased as follows: Mid-Western, 2.18 cents; Central, 3.15 cents; Atlantic and New England states, 2.62 cents, and Southeastern, 1.87 cents.

The seeming anomaly presented by the Pacific Coast territory is explained, in so far as the discrepancy between the tank wagon and service station prices are concerned, by the 6-cent discount which is allowed to dealers. In Phoenix, where the discount is only 1 cent, the dealers benefit by a 4-cent differential.

Prices declined most in the states shown within the central group. This area has become extremely competitive from a marketing standpoint because of the ease with which it may be reached from several refining centers. At the same time, expansion of the refining capacity of the Chicago plants has further aggravated the situation. The extension of gasoline pipe lines into this area, and the expected use of water transportation along the Ohio and Mississippi Rivers will likely tend to further intensify competition in this area. In a similar manner, gasoline pipe lines and the increased use of water transportation will likely be extended in the Atlantic and New England group of states and it will be noted that this group showed the second largest drop in the average price over the past year.

While these sections might be considered as areas in which competition is extreme, there is no portion of the country remaining in which marketing competition is not keenly felt. The larger marketing units are constantly expanding their normal trade territories and their objective is national distribution. This aim has been prompted by the fact transcontinental roads, carrying tourists and regular commercial travel, extend through every state and the companies feel they must hold the customer to their products no matter where he goes. This program has naturally called for an overlapping of what has been known as normal marketing territories.

Significance of Discounts

The discount arrangements now in effect throughout the country hold the clue to many apparent inconsistencies in the tank wagon and service station quotations. In the Standard Oil Co. of Indiana territory discounts above an approximately 1-cent differential are: 3 cents on purchases of 500 gallons or more, and 4½ cents on purchases of 75,000 gallons or more. Above a 2-cent differential, Standard Oil Co. of Louisiana allows a 2-cent discount off gasoline tank wagon price to dealers, and the Atlantic Refining Co. recognizes a 2-cent discount on gasoline from its posted tank wagon price schedule. A 4-cent differential is allowed in the Magnolia Petroleum Co.

TABLE NO. 1

Average Tank Wagon Prices in Cents in 50 Representative Cities for the Past Seven Years

	1924	1925	1926	1927	1928	1929	1930	1931
January 1	14.32	13.91	16.13	17.56	14.29	16.00	15.45	13.2
February 1	17.68	16.74	16.21	17.46	14.33	15.11	15.36	
March 1	18.87	19.06	17.26	17.00	14.71	14.73	14.54	
April 1	18.85	18.68	18.51	16.16	14.81	14.90	14.26	
May 1	18.85	18.35	18.48	15.32	15.02	14.94	15.27	
June 1	18.61	18.12	19.60	14.72	15.22	15.80	15.25	
July 1	17.66	19.38	19.69	14.85	15.29	16.02	14.82	
August 1	16.50	19.41	19.69	14.89	15.74	15.82	14.77	
September 1	15.75	16.70	19.58	14.62	16.04	15.74	14.58	
October 1	13.95	15.80	19.16	14.39	16.34	16.00	14.25	
November 1	13.75	15.52	18.18	14.32	16.28	15.82	13.76	
December 1	13.87	15.76	17.60	14.21	15.98	15.59	13.46	
Average	16.55	17.37	18.34	15.46	15.34	15.54	14.63	

TABLE NO. 2

Following are the daily average tank wagon prices at Chicago for the past 18 years, based on dump price of 100 gallons:

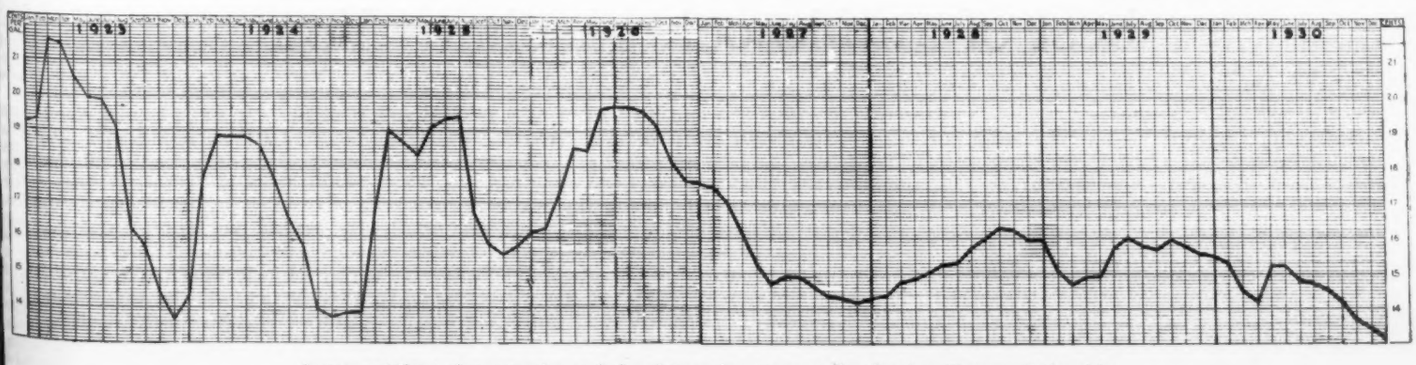
1913	14.84c
1914	12.07c
1915	11.04c
1916	17.16c
1917	20.03c
1918	22.27c
1919	22.15c
1920	25.45c
1921	20.28c
1922	20.23c
1923	17.05c
1924	17.68c
1925	16.27c
1926	17.03c
1927	14.71c
1928	14.25c
1929	15.00c
1930	14.21c

TABLE NO. 3

Gasoline Tank Wagon Price Changes During 1930 as Shown by Districts

	—Net gasoline— tank wagon price Jan. 1	Jan. 1
CENTRAL—		
Fargo, N. D.	15 3	18 9
Huron, S. D.	13 5	17 3
Wichita, Kans.	11 8	14 8
Omaha, Nebr.	13 25	16 25
Tulsa, Okla.	9.0	11 0
Dallas, Tex.	10 0	13 0
Little Rock, Ark.	11 0	13.0
Kansas City, Mo.	11 9	15 9
Des Moines, Iowa	12 5	16 5
Duluth, Minn.	14.5	17 5
Milwaukee, Wis.	13 1	16 1
Chicago, Ill.	13.0	14 0
Detroit, Mich.	10 3	16 8
Indianapolis, Ind.	12.9	16 2
Cleveland, Ohio	12.0	14 0
Average	12.27	15 42
Decrease	3 15	
MIDWESTERN—		
Helena, Mont.	15 0	20 5
Boise, Idaho	17 5	19.5
Casper, Wyo.	13 0	15.0
Reno, Nev.	24 0	21 0
Salt Lake City, Utah	15 5	17.5
Denver, Colo.	9 0	14 0
Phoenix, Ariz.	15 5	15.5
Albuquerque, N. Mex.	11 0	15 0
Average	15 06	17 25
Decrease	2.18	

	1931	1930
WESTERN COAST—		
San Francisco, Calif.	20 0	17.0
Portland, Ore.	18 5	17 5
Seattle, Wash.	20 5	17 5
Average	19 66	17 33
Increase	2 33	
ATLANTIC AND NEW ENGLAND STATES—		
Augusta, Me.	13 8	16 0
Manchester, N. H.	13.4	16 0
Burlington, Vt.	14.3	15 0
Hartford, Conn.	12 5	16.0
Springfield, Mass.	12 5	16 0
New York, N. Y.	12 3	14 0
Philadelphia, Pa.	14 0	15.0
Providence, R. I.	11.7	16 0
Newark, N. J.	10.5	15 0
Baltimore, Md.	11 2	15 0
Dover, Del.	14 0	15 0
Average	12.74	15 36
Decrease	2 62	
SOUTHEASTERN—		
Norfolk, Va.	11.3	15 0
Charleston, W. Va.	12 5	15 0
Louisville, Ky.	11 0	16 0
Memphis, Tenn.	12 0	13 0
Atlanta, Ga.	14 0	12.0
Charlotte, N. C.	13 3	12.0
Charleston, S. C.	11.3	15.0
Natchez, Miss.	13 0	15 5
Birmingham, Ala.	12 0	13 0
New Orleans, La.	10.5	10 0
Jacksonville, Fla.	11 0	16.0
Average	11.99	13.86
Decrease	1 87	



Average gasoline tank wagon price, exclusive of taxes, in cents per gallon, based on 50 representative cities.

fashion note . . . . . .

More cracking and less crude run to stills will be the style for refiners in 1931

Cork up the flush fields

Crack up the heavy fuel oil that's drowning us

Crack the gas-oil and kerosene distillate, too

The same Dubbs unit cracks any kind of stock It makes the best of anti-knock gasoline You

can make it at such low cost that the market price will spell a profit

Leave excess crude in the ground

Dubbs crack the stored oils and enjoy a happy and prosperous year

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

territory wherever the 1-cent rebate is not given.

One factor which worked for general increase in retail prices during 1929 did not figure prominently during 1930. This was the gasoline state tax, provisions for which were made in 22 states during 1929 and which necessitated a suitable price adjustment upward on the part of marketers.

Tax Increase

Four states increased their tax on gasoline 1 cent, and one state lowered its gasoline tax by the same amount during 1930. The states in which an increase was made and the dates effective are: Oregon, to 4 cents, January 1; Idaho, to 5 cents, February 25; Louisiana, to 5 cents, November 27, and New Jersey, to 3 cents, December 1. Pennsylvania lowered its tax to 3 cents July 1.

The reduction in Pennsylvania carried out the law which raised the tax to 4 cents with the provision that the 3-cent tax be re-established July 1. The second variation in the trend in gasoline taxes during the year was furnished in the same month by North Dakota, where the voters refused to raise the tax from 3 to 4 cents. During the preceding year more than a score of states passed gasoline tax legislation which brought all of the 48 states into the gasoline tax fold.

Mississippi, in May of 1930, narrowly escaped a 1-cent increase to 6 cents when a bill passed by the house in the legislature failed to become a law. Other states in which a raise in the gasoline tax was under consideration during the year were: West Virginia, Nebraska, Colorado, Wisconsin, Massachusetts, Georgia, Alabama and Washington.

The average gasoline tax for the United States, based on figures for the 50 representative cities, reached 3.83 cents, an increase of 0.06 cent over 1929, and 0.7 over the average for 1928. Approximately 393,580,000 bbls. of gasoline was sold in the United States during the year, bringing the total revenue to the states through gasoline taxes to approximately $550,000,000.

GASOLINE TANK WAGON PRICES IN EFFECT DURING 1930, EXCLUSIVE OF TAXES, IN 50 REPRESENTATIVE CITIES WITH AMOUNT AND DATE OF CHANGES, ALSO HIGH AND LOW PRICES FOR 1928, 1929 AND 1930, WITH GASOLINE TAXES IN EFFECT JANUARY 1, 1928, 1929, 1930 AND JANUARY 1, 1931

	Prices Jan. 1, 1930	Price changes during 1930												Prices Jan. 1 1931	High and low prices 1930		1929		1928		Taxes Jan. 1, 1928	Jan. 1, 1929	Jan. 1, 1930	Jan. 1, 1931
Birmingham, Ala.	13.0	2/17 15.0	4/15 16.0	5/21 15.0	7/10 13.0	8/3 11.0	9/22 13.0	12/10 12.0	....	....	....	....	....	12.0	16.0	11.0	18.0	13.0	18.0	11.0	4.0	4.0	4.0	4.0
Phoenix, Ariz.	15 5	2/1 14.0	5/27 13.0	10/24 15.5	....	....	....	....	....	....	....	....	....	15.5	15.5	13.0	14.0	11.0	18.0	14.0	4.0	4.0	4.0	4.0
Little Rock, Ark.	13.0	3/6 11.0	4/14 13.0	6/20 12.0	9/4 10.0	9/24 12.0	10/2 11.5	10/7 10.0	10/16 9.5	10/18 10.0	11/3 8.0	11/7 10.0	12/18 11.0	11.0	13.0	8.0	15.0	12.0	16.0	11.0	5.0	5.0	5.0	5.0
San Francisco, Calif.	17.0	4/22 18.5	6/15 15.5	7/11 16.0	9/15 20.0	....	....	....	....	....	....	....	....	20.0	20.0	15.5	17.0	12.0	14.0	11.0	3.0	3.0	3.0	3.0
Denver, Colo.	14.0	3/8 12.0	4/12 13.0	5/31 12.0	12/17 10.0	12/22 9.0	12/29 8.0	....	....	....	....	....	....	9.0	14.0	9.0	15.0	11.0	16.0	13.0	3.0	4.0	4.0	4.0
Hartford, Conn.	16.0	2/11 14.5	2/26 13.5	4/9 14.5	4/30 15.5	12/20 12.5	...	....	....	....	....	....	....	12.5	16.0	13.5	18.0	16.0	18.0	16.0	2.0	2.0	2.0	2.0
Dover, Del.	15.0	5/29 16.0	10/1 15.0	11/7 14.0	....	....	....	....	....	....	....	....	....	14.0	16.0	14.0	17.0	15.0	18.0	16.0	3.0	3.0	3.0	3.0
Jacksonville, Fla.*	16.0	2/6 14.0	4/22 15.0	7/2 14.0	7/30 13.0	10/25 11.0	....	....	....	....	....	....	....	11.0	16.0	11.0	18.0	16.0	18.0	13.0	5.0	5.0	6.0	6.0
Atlanta, Ga.*	14.0	1/11 16.0	4/22 15.0	7/10 13.0	9/22 15.0	10/25 14.0	....	....	....	....	....	....	....	14.0	16.0	13.0	18.0	14.0	18.0	13.0	4.0	4.0	6.0	6.0
Boise, Idaho	19.5	2/8 18.5	12/16 17.5	....	....	....	....	....	....	....	....	....	....	17.5	19.5	17.5	20.5	17.5	20.5	19.5	4.0	4.0	4.0	5.0
Peoria, Ill.	16.2	2/17 14.2	4/12 15.2	9/2 15.2	8/29 13.2	11/3 12.0	....	....	....	....	....	....	....	12.0	16.2	12.0	16.2	14.2	15.2	9.0	2.0	....	3.0	3.0
Chicago, Ill.	14.0	4/12 15.0	9/29 13.0	....	....	....	....	....	....	....	....	....	....	13 0	15.0	13.0	16.0	14.0	15.0	14 0	2.0	....	3 0	3.0
Indianapolis, Ind.	16.2	2/17 14.2	4/12 15.2	9/2 14.9	9/29 12.9	....	....	....	....	....	....	....	....	12.9	16.2	12.9	16.2	14.2	15.2	10.2	3.0	3.0	4.0	4.0
Des Moines, Iowa	16.5	2/17 14.5	4/12 15.5	8/30 12.5	....	....	....	....	....	....	....	....	....	12.5	16.5	12.5	16.5	14.5	15.5	11.9	3.0	3.0	3.0	3.0
Wichita, Kans.	14.8	2/17 12.8	4/12 13.8	9/29 11.8	....	....	....	....	....	....	....	....	....	11.8	14.8	11.8	14.8	12.8	13.8	10.8	2.0	2.0	3.0	3.0
Louisville, Ky.	16.0	1/24 14.0	4/22 15.0	6/3 13.0	7/3 13.0	10/25 11.0	....	....	....	....	....	....	....	11.0	16.0	11.0	16.0	15.0	16.0	13.0	5.0	5.0	5.0	5.0
New Orleans, La.	10.0	4/15 11.0	6/17 9.5	8/23 8.5	9/23 11.5	10/4 9.5	10/7 7.5	12/3 9.5	12/18 10.5	....	....	....	....	10.5	11.5	7.5	13.5	10.0	14.5	10.5	†3.0	†3.0	†5.0	†6.0
Augusta, Me.	16.0	2/1 15.8	2/11 14.8	3/6 13.8	4/9 14.8	4/29 15.8	12/20 13.8	....	....	....	....	....	....	13.8	16.0	13.8	17.0	16.0	18.0	17.0	4.0	4.0	4.0	4.0
Baltimore, Md.	15.0	1/6 13.2	9/24 11.2	....	....	....	....	....	....	....	....	....	....	11.2	15 0	11 2	16.0	14.0	16 0	15.0	4.0	4 0	4.0	4 0
Springfield, Mass.	16.0	1/10 14.0	2/11 14.5	3/6 13.5	4/9 14.5	9/29 12.9	10/1 15.5	12/20 12.5	....	....	....	....	....	12.5	16.0	12.9	18.0	16.0	18.0	16.0	....	....	2.0	2.0
Detroit, Mich.	16.8	2/7 15.8	2/17 14.8	4/12 15.8	9/13 13.8	11/17 10.3	....	....	....	....	....	....	....	10.3	16.8	10.3	16.8	14.8	15.8	11.8	3.0	3.0	3.0	3.0
Duluth, Minn.	17.5	2/17 16.5	4/12 16.5	9/29 14.5	....	....	....	....	....	....	....	....	....	14.5	17.5	14.5	17.5	15.5	16.5	12.5	2.0	2.0	3.0	3.0
Natchez, Miss.	15.5	1/24 13.5	4/15 14.5	7/10 14.0	10/25 13.0	....	....	....	....	....	....	....	....	13.0	15.5	13.0	16.5	14.0	16.5	12.5	4.0	5.0	5.0	5.0
Kansas City, Mo.	15.9	2/17 13.9	4/12 14.9	9/29 11.9	....	....	....	....	....	....	....	....	....	11.9	15.9	11.9	15.9	13.9	14.9	10.9	†3.0	†3.0	†3.0	†3.0
Helena, Mont.	26.5	2/8 18.5	4/12 19.5	10/1 17.5	11/8 15.0	....	....	....	....	....	....	....	....	15.0	20.5	15.0	20.5	19.5	20.5	19.5	3.0	3.0	5.0	5.0
Omaha, Nebr.	16.25	2/17 14.25	4/12 15.25	9/29 13.25	....	....	....	....	....	....	....	....	....	13.25	16.25	13.25	16.25	14.25	15.25	13.25	2.0	2.0	4.0	4.0
Reno, Nev.	21.0	4/22 23.0	6/15 20.0	9/15 24.0	....	....	....	....	....	....	....	....	....	24.0	24.0	20.0	20.0	18.0	18.0	18.0	4.0	4.0	4.0	4.0
Newark, N. J.	15.0	1/6 13.5	9/24 11.5	11/21 10.5	....	....	....	....	....	....	....	....	....	10.5	15.0	10.5	15.0	14.0	16.0	15.0	2.0	2.0	2.0	3.0
Albuquerque, N. Mex.	15.0	4/17 16.0	6/17 11.0	7/30 15.0	8/2 13.0	8/9 11.0	8/14 9.0	8/29 11.0	....	....	....	....	....	11.0	16.0	9.0	17.0	15.0	17.0	14.0	5.0	5.0	5.0	5.0
New York, N. Y.	14.0	2/1 14.3	2/11 13.3	2/26 12.3	4/9 13.3	4/29 14.3	9/8 12.3	...	....	....	....	....	....	12.3	14.3	12.3	18.0	14.0	18.0	17.0	....	....	2.0	2.0
Charlotte, N. C.	13.0	1/6 15.3	3/29 14.3	5/19 15.3	9/24 13.3	....	....	....	....	....	....	....	....	13.3	15.3	12.0	16.6	12.0	17.0	15.0	4.0	4.0	5.0	5.0
Fargo, N. D.	18.9	2/17 16.9	4/12 17.9	9/29 15.3	....	....	....	....	....	....	....	....	....	15.3	18.9	15.3	18.9	16.9	17.9	12.0	2.0	2.0	3.0	3.0
Cleveland, Ohio	14.0	4/12 15.0	5/24 16.0	12/17 12.0	....	....	....	....	....	....	....	....	....	12.0	16.0	12.0	16.0	14.0	16.0	14.0	3.0	3.0	4.0	4.0
Tulsa, Okla.	11.0	4/15 12.0	9/29 11.0	10/2 10.0	12/1 9.0	....	....	....	....	....	....	....	....	9.0	12.0	9.0	11.0	10.0	14.0	10.0	3.0	3.0	4.0	4.0
Portland, Ore.	17.5	3/11 15.5	4/22 19.5	6/15 16.5	9/15 20.5	11/13 18.5	12/12 20.5	18.5	....	....	....	....	....	18.5	20.5	15.5	17.5	12 5	14.5	14.5	3.0	3.0	4.0	5.0
Philadelphia, Pa.	15.0	5/29 16.0	10/1 15.0	11/7 14.0	....	....	....	....	....	....	....	....	....	14.0	16.0	14.0	17.0	15.0	18.0	15.0	‡3.0	‡3.0	‡4.0	‡3.0
Providence, R. I.	16.0	2/11 13.7	3/6 12.7	4/9 13.7	10/1 11.7	11/7 10.7	12/20 11.7	....	....	....	....	....	....	11.7	16.0	10.7	18.0	16.0	19.0	17.0	2.0	2.0	2.0	2.0
Charleston, S. C.	15.0	1/6 13.3	9/24 11.3	....	....	....	....	....	....	....	....	....	....	11.3	15.0	11.3	16.0	14.0	17.0	15.0	5.0	5.0	6.0	6.0
Huron, S. D.	17.3	2/17 16.3	4/12 16.3	9/29 13.5	....	....	....	....	....	....	....	....	....	13.5	17.3	13.5	17.3	15.3	16.3	14.5	4.0	4.0	4.0	4.0
Memphis, Tenn.	13.0	2/27 12.0	4/15 13.0	7/21 12.5	8/5 12.0	9/4 10.0	9/23 13.0	10/4 12.0	10/7 11.0	10/15 9.0	10/20 12.0	11/5 11.0	12/19 12.0	12.0	13.0	9.0	15.0	11.0	16.0	12.0	3.0	3.0	5.0	5.0
Dallas, Tex.	13.0	2/18 12.0	5/24 10.0	....	....	....	....	....	....	....	....	....	....	10.0	13.0	10.0	14.0	11.0	14.0	9.0	3.0	2.0	4.0	4.0
Salt Lake City, Utah	17.5	2/8 16.5	12/16	15.5	....	....	....	....	....	....	....	....	....	15.5	17.5	15.5	18.5	17.5	18.5	16.5	3.5	3.5	3.5	3.5
Burlington, Vt.	15.0	2/1 16.3	2/11 15.3	2/24 13.6	4/9 14.6	4/29 15.6	12/20 14.3	....	....	....	....	....	....	14.3	16.3	13.6	17.0	15.0	18.0	17.0	3.0	4.0	4.0	4.0
Norfolk, Va.	15.0	1/6 13.3	9/24 11.3	....	....	....	....	....	....	....	....	....	....	11.3	15.0	11.3	16.0	14.0	16.0	14.0	4.5	5.0	5.0	5.0
Washington, D. C.	15.0	1/6 13.7	9/24 11.7	....	....	....	....	....	....	....	....	....	....	11.7	15.0	11.7	16.0	14.0	16.0	15.0	2.0	2.0	2.0	2.0
Charleston, W. Va.	15.0	1/6 14.5	1/24 12.5	....	....	....	....	....	....	....	....	....	....	12.5	15.0	12.5	16.0	14.0	17.0	15.0	4.0	4.0	4.0	4.0
Milwaukee, Wis.	16.1	2/17 14.1	4/12 15.1	9/29 13.1	....	....	....	....	....	....	....	....	....	13.1	16.1	13.1	16.1	14.1	15.1	13.1	2.0	2.0	2.0	2.0
Casper, Wyo.	15.0	2/8 14.0	4/12 15.0	10/1 13.0	....	....	....	....	....	....	....	....	....	13.0	15.0	13.0	17.0	15.0	16.0	14.0	3.0	3.0	4.0	4.0
Seattle, Wash.	17.5	2/28 16.5	3/11 15.5	4/22 19.5	6/15 16.5	9/15 20.5	....	....	....	....	....	....	....	20.5	20.5	15.5	17.5	12.5	14.5	14.5	2.0	2.0	3.0	3.0
Minneapolis, Minn.	17.2	2/17 15.2	4/12 16.2	9/11 13.0	9/29 14.0	....	....	....	....	....	....	....	....	14.0	17.2	13.0	17.2	15.2	16.2	11.0	2.0	2.0	3.0	3.0
Average price	15.54	....	....	....	....	....	....	....	....	....	....	....	....	13.2	17.44	12.52	16.70	14.26	16.54	13.54	3.08	3.11	3.77	3.83

*Jacksonville prices include one-eighth cent inspection fee but at Atlanta one-half cent fee is not included. †Includes 1-cent city tax. ‡Pennsylvania tax paid by retailer.

Notes—In Standard Oil Co. of Indiana territory, effective June 3, discounts on Q.D.A. in Chicago district 4 cents off service station price on purchases of 500 gallons or more per month and 5 cents on purchases of 1,000 gallons or more per month. The following quantity discounts from the service station price on purchases of 500 gallons or more per month are allowed on monthly sales of gasoline: 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents; 75,000 gallons or more, 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

At several points 2-cent per gallon discounts under tank wagon prices are allowed dealers and commercial accounts.

Oil Had Hectic Year in California

Tremendous Potential Production, Efforts at Curtailment and Rigid Application of State Conservation Laws Marked 1930 on Coast

By L. P. Stockman
Staff Correspondent, California Fields

Aggressive curtailment of production, statewide in scope and extending throughout the year, was a very important factor in 1930 and, although the gas conservation law failed to exert any influence on production, two favorable decisions by the State Supreme Court and the District Court of Appeals upholding its constitutionality indicates that it will be a factor of paramount importance during the coming year if state officials decide upon rigid enforcement.

Crude oil production during 1930 was approximately 200,000 bbls. per day below 1929, California's banner year when production averaged 800,101 bbls. per day.

In contrast, with a daily average production of 709,137 bbls. per day in January, 1930, the present year has started off with an average daily production of 540,000 bbls. and, while this was still somewhat in excess of the new curtailment objective of 500,000 bbls. per day, subsequent curtailment has brought production down to within striking distance of the present goal. California operators started on their ninth consecutive year of curtailment on January 1, 1931, and if any degree of stability is to be maintained it will probably be at least another five years before any substantial relaxation can be expected. Certainly no normal recovery can be anticipated in view of present excess production.

Curtailment work in California, accomplished by artificially reducing production through the use of smaller flow nipples in wells of flush fields and restricting the pumping period in settled fields to daylight hours or less, was an important factor in the production situation during 1930. Effective January 1, 1931, and until conditions improve, California operators will be obliged to limit production to a maximum of 500,000 bbls. per day. This allotment will be subject to revision from time to time but no substantial increase in the maximum allowable can be anticipated until the present economic depression is over and the world-wide overproduction situation corrected or alleviated.

CALIFORNIA POTENTIAL DAILY PRODUCTION

	Marketable daily production	No. of wells producing	Curtailed: Daily production	Curtailed: No. of wells	Total potential: Daily production	Total potential: No. of wells
1929—						
January	754,385	10,750	112,409	3,536	866,794	14,286
February	796,454	10,683	118,864	3,721	915,318	14,404
March	784,669	10,593	120,380	3,831	905,048	14,424
April	776,502	10,604	136,003	3,844	912,505	14,448
May	775,915	10,347	173,906	3,860	949,821	14,207
June	820,821	10,305	135,704	3,934	956,525	14,239
July	864,407	10,405	127,500	4,014	991,907	14,419
August	878,495	10,489	128,770	4,027	1,007,265	14,516
September	870,142	10,635	124,100	3,989	994,242	14,624
October	867,586	10,687	120,510	4,017	988,096	14,704
November	710,585	10,586	264,253	4,113	974,838	14,699
December	700,179	10,515	334,470	4,225	1,034,649	14,740
Daily average	800,101	10,550	157,983	3,926	958,084	14,476
1930—						
January	709,137	10,386	308,870	4,358	1,018,007	14,744
February	745,916	10,180	236,846	4,640	982,762	14,820
March	635,483	9,533	262,796	5,374	898,279	14,907
April	625,625	9,589	291,437	5,483	917,062	15,072
May	614,337	9,443	270,123	5,592	884,460	15,035
June	600,693	9,446	282,283	5,631	882,976	15,077
July	606,517	9,440	286,343	5,668	892,860	15,108
August	605,499	9,497	297,524	5,710	903,023	15,207
September	599,477	9,543	306,918	5,719	906,395	15,262
October	588,518	9,523	298,583	5,766	887,101	15,289
November	603,648	9,547	291,607	5,792	895,255	15,339
December	573,765	9,454	293,622	5,865	867,387	15,319
Daily average	624,931	9,632	285,579	5,466	910,510	15,098

Must Curtail for Years

Curtailment work during the next several years will require a restriction in both drilling and production activities if maximum effectiveness is desired. There is such a large volume of oil in sight at the present time that it is preposterous to contemplate an early return to normalcy because the disparity between production and consumption is too great to permit normal recovery without regulation. Crude oil reserves in proven virgin zones in the Dominguez, Coyote and Inglewood Fields of Los Angeles Basin and the development of prolific Temblor production in the Kettleman Hills and Lost Hills-Belridge Fields of the San Joaquin Valley preclude any possibility of unrestricted development.

Great strides were made during the last six months of 1930 toward effecting unit development in the North Dome at Kettleman Hills and this plan may become operative early in 1931, although operators are of the opinion that it will not become effective until expiration of the present Kettleman Hills agreement on July 31, 1931. National legislation gave the Secretary of the Interior authority to sanction unit development at Kettleman Hills and approval of contemplated work was given by the Department of Interior early in January, 1931. Under the new arrangement a sliding scale of royalties has been agreed upon. This provides that Kettleman Hills operators holding government leases will pay 12½ per cent royalty on wells producing below 15,000 bbls. per day and 33⅓ per cent on higher production. Kettleman operators removed another barrier early in January, 1931, by ratifying a comprehensive report which established the productive acreage of the North Dome at 18,000 acres. Matters of great importance affecting unit development were discussed at length by operators all year and it was not until early in January, 1931, that the major complex problems were finally agreed upon. Unit development is necessary at Kettleman Hills because unrestricted drilling in this prolific field would wreck price structures of the entire world. The North Dome alone contains enough natural gas to supply the entire State of California for the next 50 years and it has sufficient crude oil and natural gasoline to supply the normal requirements of California motorists for the next 25 years.

The Plan of Unification

The plan contemplating unification of development work in the North Dome of Kettleman Hills consists of a double unit plan of operation, both units of which, however, will be amenable to the general program adopted. One unit will comprise all productive acreage in the North Dome with the exception of the Standard's holdings which will form the second unit. Articles of incorporation for the Kettleman North Dome Association, the instrumentality through which the unit plan will function, were filed with the Secretary of State at Sacramento on December 30, 1930. The purpose of the association as set forth in the articles of incorporation is "to provide, without profit to the corporation for the unified development and production of oil, gas, etc., under an agreement between the Secretary of the Interior of the United States and the various landowners and operators of lands for the production of oil, gas, etc., within North Dome of Kettleman Hills, with the aim that ultimately each and every member shall have received his just share of products derived or revenues received from the production." The association has 11 directors who will determine the method of operation and perform other prescribed duties. The directors are J. A. Brown, president

CALIFORNIA CRUDE OIL PRODUCTION, JANUARY-DECEMBER, 1930, INCLUSIVE

(Barrels 42 U. S. gallons)

District—	January	February	March	April	May	June	July	August	September	October	November	December	Total	Daily
Kern River	628,619	547,830	477,253	468,907	466,120	430,316	431,958	415,709	381,114	379,270	358,627	364,192	5,349,915	14,657
Mount Poso	389,638	378,288	307,522	357,376	308,062	396,461	338,877	326,940	287,425	264,525	264,144	264,666	3,883,924	10,641
Fruitvale	97,424	77,814	63,939	58,207	78,671	80,265	75,739	70,372	70,228	80,632	74,995	75,051	903,337	2,475
Round Mountain	87,193	82,583	100,361	118,137	109,965	110,869	116,236	121,151	124,019	125,264	93,551	5,503	1,194,832	3,274
McKittrick	147,969	132,315	131,865	126,932	121,928	116,455	115,835	124,539	120,273	121,253	118,065	112,199	1,489,628	4,081
Midway-Sunset	2,256,593	2,121,947	2,117,942	2,006,331	1,972,929	1,881,409	1,983,475	1,948,348	1,845,938	1,842,401	1,778,720	1,731,114	23,487,147	64,348
Elk Hills	519,720	478,656	547,998	605,800	610,714	580,018	556,712	559,811	535,637	542,513	526,420	508,380	6,572,379	18,007
Lost Hills-Belridge	155,212	143,685	74,834	68,352	69,726	68,211	68,304	70,009	67,730	144,826	181,057	201,529	1,313,475	3,599
Coalinga	285,941	268,252	285,831	277,991	289,651	281,094	286,456	287,180	273,924	287,925	269,908	278,925	3,373,078	9,241
Kettleman Hills	492,842	368,676	398,684	422,553	459,258	431,692	417,475	415,815	660,806	760,606	759,011	711,939	6,209,357	17,012
Wheeler Ridge	19,116	17,817	19,193	17,980	18,685	17,761	18,014	17,900	17,721	18,202	17,860	18,988	219,237	601
Watsonville	1,938	1,750	1,938	1,875	1,887	1,875	1,938	1,937	1,875	1,938	1,875	1,938	22,764	62
Santa Maria	111,369	95,696	95,832	93,441	106,806	98,875	111,134	112,440	89,046	79,119	76,903	82,232	1,152,893	3,159
Capitan	.....	3,498	2,298	568	309	736	465	1,894	.....	.....	206	15,317	25,295	69
Summerland	13,518	9,673	12,568	9,740	10,973	9,333	11,144	8,852	8,430	7,751	7,522	8,538	118,042	323
Elwood	915,293	1,217,368	1,209,024	1,319,017	1,533,125	1,310,706	1,379,544	1,328,170	1,127,659	1,115,642	1,077,209	1,073,250	14,606,007	40,016
Santa Barbara	3,045	106	.....	.....	.....	.....	.....	.....	1,800	.....	3,000	4,900	12,851	35
Rincon	107,818	86,873	89,795	84,715	94,607	79,791	76,957	75,771	77,062	73,122	77,825	78,868	1,003,204	2,749
Ventura Avenue	1,605,932	1,540,039	1,375,453	1,358,538	1,503,518	1,448,640	1,525,544	1,472,814	1,399,048	1,429,755	1,414,480	1,419,394	17,493,155	47,927
Ventura-Newhall	159,002	147,582	155,156	149,465	151,916	144,292	146,133	140,895	149,699	151,078	138,041	138,872	1,772,131	4,855
Los Angeles-Salt Lake	49,656	44,448	47,205	45,291	46,513	45,101	46,653	48,168	46,807	44,157	40,883	41,077	545,959	1,496
Whittier	45,762	40,846	43,701	42,007	44,298	42,869	43,644	44,413	42,057	41,990	41,676	43,540	516,802	1,416
Fullerton (Brea Olinda)	469,485	375,316	419,997	379,617	392,105	366,588	369,354	360,824	347,460	342,399	330,275	329,846	4,423,266	12,119
Coyote	354,833	334,567	335,805	311,074	316,891	309,892	308,202	339,745	326,052	312,787	312,064	328,135	3,890,047	10,658
Santa Fe Springs	5,302,294	5,017,845	4,650,283	3,842,187	3,719,842	3,391,433	3,477,645	3,375,833	3,058,723	2,935,623	2,816,219	2,663,469	44,251,396	121,237
Montebello	266,513	240,894	217,512	219,498	221,003	217,178	226,178	222,252	212,984	221,481	220,595	226,637	2,712,725	7,432
Richfield	437,256	409,067	332,363	298,163	293,164	268,544	273,537	282,264	271,706	271,167	265,532	240,815	3,643,578	9,982
Huntington Beach	1,272,412	1,148,030	902,750	853,728	884,017	854,976	894,233	904,584	868,731	879,420	847,102	798,220	11,108,203	30,433
Long Beach	3,297,792	3,186,755	3,082,062	3,098,489	2,948,667	2,792,064	3,104,231	3,202,762	3,012,552	3,040,799	2,919,657	2,913,858	36,599,688	100,273
Torrance	391,324	345,922	375,645	356,143	352,746	348,200	361,392	344,757	337,040	319,626	304,356	279,695	4,116,846	11,279
Dominguez	332,608	309,505	282,908	291,535	324,742	302,550	319,492	310,757	298,630	318,944	297,019	305,385	3,694,075	10,121
Rosecrans	215,220	190,648	211,081	191,865	214,608	207,349	210,167	216,643	192,705	194,768	190,633	199,854	2,435,341	6,672
Inglewood	681,191	613,625	551,495	522,814	532,669	516,372	536,627	540,958	511,614	466,344	470,396	485,100	6,429,205	17,614
Newport	1,240	1,120	1,240	1,200	1,240	1,200	1,240	1,240	1,200	1,240	1,200	1,240	14,600	40
Seal Beach	930,489	870,902	744,180	704,563	680,204	612,041	648,134	621,578	566,963	580,923	539,604	527,215	8,026,796	21,991
Potrero	23,791	19,915	29,501	40,091	74,715	119,425	57,617	61,586	60,055	50,415	53,430	47,727	638,268	1,749
Lawndale	22,134	15,807	4,765	12,981	10,735	8,321	8,231	9,227	8,084	10,910	9,185	10,092	130,472	357
Playa Del Rey	41,060	.....	.....	11,572	77,435	127,893	253,503	382,328	581,509	785,238	1,210,415	1,249,028	4,719,981	12,931
Total	21,983,242	20,885,660	19,699,979	18,768,743	19,044,444	18,020,795	18,802,024	18,770,466	17,984,306	18,244,053	18,109,459	17,786,728	228,099,899	624,931
Daily average 1930	709,137	745,916	635,483	625,625	614,337	600,693	606,517	605,499	599,477	588,518	603,648	573,765	.....	624,931
Daily average 1929	754,385	796,454	784,669	776,502	775,915	820,821	864,407	878,495	870,142	867,586	710,585	700,179	.....	800,101
Daily average 1928	613,814	622,016	616,720	609,357	623,609	638,808	637,241	627,255	630,272	626,806	663,584	695,958	.....	633,832
Daily average 1927	651,125	642,240	639,862	649,794	629,228	639,381	623,194	621,907	635,483	627,384	617,216	610,930	.....	632,196
Daily average 1926	615,147	612,999	607,283	603,059	602,166	608,981	604,619	605,326	603,498	611,808	639,104	654,095	.....	614,019
Daily average 1925	604,622	602,494	600,839	598,655	607,107	642,938	658,421	677,599	668,759	645,648	636,530	620,958	.....	630,541
Daily average 1924	674,597	666,939	642,363	643,328	639,793	626,933	621,766	616,548	610,274	603,115	592,234	606,294	.....	628,588
Daily average 1923	530,885	586,670	632,522	689,865	694,689	755,570	814,906	852,903	858,750	792,787	746,595	706,427	.....	722,545
Daily average 1922	313,472	323,585	330,663	339,536	359,554	357,731	374,138	382,221	406,838	432,885	467,851	497,639	.....	382,539
Daily average 1921	325,401	328,104	338,544	338,992	336,941	337,045	329,844	343,227	261,980	227,865	293,616	325,631	.....	313,822

of the General Petroleum Corp. of California; R. E. Collom, California manager of the Continental Oil Co.; S. B. Mosher, president of the Signal Oil & Gas Co.; William C. McDuffie, president of the Pacific Western Oil Co.; Rush M. Blodget, vice president of the George F. Getty, Inc.; William Reinhardt, vice president of the Shell Oil Co.; William Humphrey, president of the Associated Oil Co.; Carl H. Beal, petroleum engineer; M. P. Lombardi, director of the Standard Oil Co. of California; J. R. Pemberton, chief geologist of the Petroleum Securities Co. and E. H. McCullough, California representative of the Amerada Petroleum Corp.

Only One Field Opened

Only one new field was discovered in California during 1930, although another was appearing on the horizon as the year drew to a close. The new field chalked up in 1930 was located in the Weed Patch district of Kern County about 10 miles southeast of Bakersfield in the extreme southern end of the San Joaquin Basin. The Weed Patch, or Mountain View Field, as it will probably be designated, was discovered by the Shell Oil Co. in July, 1930. It did not produce commercially last year as the overproduction situation in California rendered it advisable to proceed only with exploration work. The Shell accordingly drilled ahead in the discovery well and subsequently proved up a second productive horizon in which this well showed a potentiality of 2,500 bbls. per day. After testing out this second zone, drilling was again resumed but this additional exploration work was still unproductive as the new year got under way. The Mohawk Oil Co., developing some acreage in this field on a fifty-fifty basis with the Shell, picked up the oil sand in a test about 1,000 feet southeast of the discovery well late in December and this project should be completed shortly. Correlation work indicates the probability that the apex of the structure is north of the discovery well, which is located in Section 29-30-29, as the Mohawk's outpost was deeper stratigraphically. It is problematical whether this new field will be much of a factor from a production standpoint during the coming year due to curtailment. The potentially productive acreage is all held in large blocks and, while additional drilling will be necessary because of lease requirements, the Shell should be able to keep production down to a minimum.

Favorable Court Decision

It is interesting to note in this connection that Superior Judge Gates upheld the principle of oil conservation and curtailment in a test instituted late in 1930. The decision resulted from a suit filed by The Texas Company complaining that in spite of the fact that it had drilled four wells on the Alta Vedder lease in the Mount Poso Field of Kern County, the lessor was threatening cancellation of the lease because the wells were beaned down in conformity with the statewide curtailment program. The Texas Company admitted the wells were not allowed to flow to capacity but justified this policy by calling attention to the fact that it was in line with state and federal conservation policies. Judge Gates granted The Texas Company a temporary restraining order against cancellation of the lease in question, although it was obliged to post a $20,000 bond to protect the defendant in case the judgment of the court was subsequently reversed. The outcome of this action is of great importance as an adverse decision would disrupt future curtailment work. Curtailment work in California has made it necessary for many operators to artificially restrict production and in some cases suspend production activities entirely. This may result in the enactment of legislation sanctioning this procedure as producers must be protected against litigation while attempting to effect stabilization.

Temblor Discovery

The most important development in California from a drilling standpoint was perhaps the discovery of Temblor production in the North Belridge Field of Kern County and the coring of a similar formation in the Lost Hills Field. Commercial production was not secured in the latter field during 1930 due to persistent water trouble but the outlook is favorable for a successful completion in the Temblor formation in 1931. The Universal Consolidated, a subsidiary of the Richfield Oil Co., actually cored the deep zone at Lost Hills but has been unable to effect a satisfactory water shutoff. Four cement jobs were made on this well during December without success but these failures have not dampened the enthusiasm of the company in the least. The existence of a high head water above the shoe of the water string is believed to be responsible for the water trouble encountered.

Credit for the actual discovery of Temblor production in the North Belridge Field goes to the Belridge Oil Co., although other operators recognized this possibility subsequent to the discovery of a similar nature in the Kettleman Hills Field by the Milham Exploration Co. The Belridge Oil Co.'s deep zone discovery well, No. 15 in Section 26-27-20, was given a preliminary test in April, 1930, at which time it showed a potentiality of 200 bbls. of 45 gravity oil per day from 5,087 feet. The small production secured was somewhat disappointing, however, and the well was subsequently deepened. It was later recompleted flowing 2,750 bbls. of 46.2 gravity oil and 50,000,000 feet of natural gas per day from 5,457 feet in October, 1930. It is at present doing 4,000 bbls. of oil and 35,000,000 feet of natural gas per day. The significance which attaches to the completion of this well lies in the fact that it not only revealed the existence of prolific Temblor production at North Belridge but also indicated the possibility that similar deep drilling might be productive of like results in the Lost Hills, South Belridge and other San Joaquin Basin fields.

New Deep Zone

The Standard Oil Co. of California discovered a new deep zone in the West Coyote Field of Los Angeles Basin early in 1930, thereby adding from 50,000,000 to 100,000,000 bbls. of crude oil to its already large reserve. The discovery of this new deep zone resulted from the completion of No. 43-A on the Emery lease in Section 13-3-11, which came in flowing 1,175 bbls. of exceptionally clean 31.2 gravity oil from 5,382 feet. This is the third productive horizon found in the West Coyote Field by the Standard up to the present time. Current production is coming from the upper zone in this field and no immediate deep drilling is contemplated as the Standard controls practically the entire structure and will conserve this oil for some future date. Between the present producing horizon and the new deep zone discovered at 5,382 feet, an intermediate horizon designated as the 99 zone is picked up at approximately 4,000 feet. The Standard has drilled two test wells into the 99 zone but both of these have been shut in for several years as a conservation measure. The two wells completed in the 99 zone are located approximately 2,000 feet apart and, while the extreme outer limits of this zone have not been established, there is no doubt of its high productivity.

Santa Fe Springs' Leadership

Santa Fe Springs, due to deep zone development which extended over into the first several months of 1930, headed the production list for last year, followed by Long Beach, Midway-Sunset, Ventura Avenue, Elwood and Huntington Beach in the order named. All of these fields, with the exception of Elwood, showed substantial declines from the production chalked up in 1929 due to effective curtailment and a normal decline. The substantial increase in production registered by Elwood is due to the fact that this field was in the ascendency while the others had already attained their peak production and were consequently declining. Elwood produced 9,435,819 bbls. of crude in 1929, while the output in 1930 was in excess of 14,500,000 bbls., despite aggressive curtailment. Operators in this field effected a drilling moratorium with the result that there is only one incompleted drilling project under way at the present time. Deep drilling and extension work out around the edge of the structure was an important factor at Long Beach during the past 12 months. The trend of production was down, however, although part of this decline was due to additional curtailment.

Playa Del Rey's Peak

The Playa Del Rey Field of Los Angeles Basin, discovered by the Ohio Oil Co. in 1929, reached its peak production during the latter part of 1930 and at the present time appears definitely headed for a lower level. This field, which experienced an aggressive town lot drilling campaign, subsequent to discovery, has proved a dismal failure from a financial standpoint as the greater majority of wells drilled in this field will never pay out. The substantial losses which will accrue from drilling operations at Playa Del Rey can be attributed to two factors, the most important of which is the absence of an accumulation sufficient to justify overdevelopment. The second unfavorable factor is the relatively low quality of oil produced and the resulting low price which oil of this grade commands. The failure of operators to effect curtailment early in 1930 has also resulted in serious losses as a considerable quantity of Playa Del Rey crude was marketed late in the year as low as

(Continued on Page 147)

TOTAL FLUID STOCKS OF PETROLEUM HELD IN PACIFIC COAST TERRITORY
(Barrels)

1930—	Heavy crude and fuel	Refinable crude	Gasoline	Naphtha distillates	All other stocks	Total all stocks
January 31	113,073,237	42,068,114	17,825,998	2,566,998	10,812,196	186,346,543
February 28	113,687,953	44,341,155	18,747,359	2,494,887	10,427,369	189,698,723
March 31	113,123,700	44,810,122	18,202,025	3,026,623	9,807,908	188,970,378
April 30	112,198,691	44,475,703	18,038,274	3,184,353	9,295,738	187,192,759
May 31	112,777,460	43,749,958	18,635,346	3,022,565	9,546,205	187,731,534
June 30	113,036,486	41,863,482	17,103,762	2,992,918	9,345,604	184,342,252
July 31	112,250,064	41,831,069	16,443,388	2,875,767	8,855,657	182,255,945
August 31	111,431,519	41,702,823	16,259,683	2,684,304	9,145,461	181,223,790
September 30	110,959,288	42,207,293	15,906,323	2,492,093	8,868,955	180,433,952
October 31	109,299,903	42,660,721	16,174,546	2,380,615	8,984,700	179,500,485
November 30	109,410,308	42,691,166	16,755,344	2,598,914	8,855,038	180,310,770
December 31	109,419,521	42,744,491	17,241,334	2,937,081	8,690,714	181,033,141

PRODUCTION OF CRUDE BY MONTHS—CALIFORNIA OIL DISTRICTS
(Barrels of 42 U. S. gallons)

Month—	1930 Total bbls.	1930 Dly. av.	1929 Total bbls.	1929 Dly. av.
January	31,9: 3,242	709,137	23,385,939	754,385
February	20,885,660	745,916	22,300,707	796,454
March	19,699,979	635,483	24,324,729	784,669
April	18,768,743	625,625	23,295,060	776,502
May	19,044,444	614,337	24,053,351	775,915
June	18,020,795	600,693	24,624,627	820,821
Total first half	118,402,863	654,159	141,984,413	784,444
July	18,802,024	606,517	26,796,627	864,407
August	18,770,466	605,499	27,233,353	878,495
September	17,984,306	599,477	26,104,264	870,142
October	18,244,053	588,518	26,895,160	867,586
November	18,109,459	603,648	21,317,540	710,585
December	17,786,728	573,765	21,705,554	700,179
Total last half	109,697,036	596,180	150,052,498	815,502
Total year	228,099,899	624,931	292,036,911	800,101

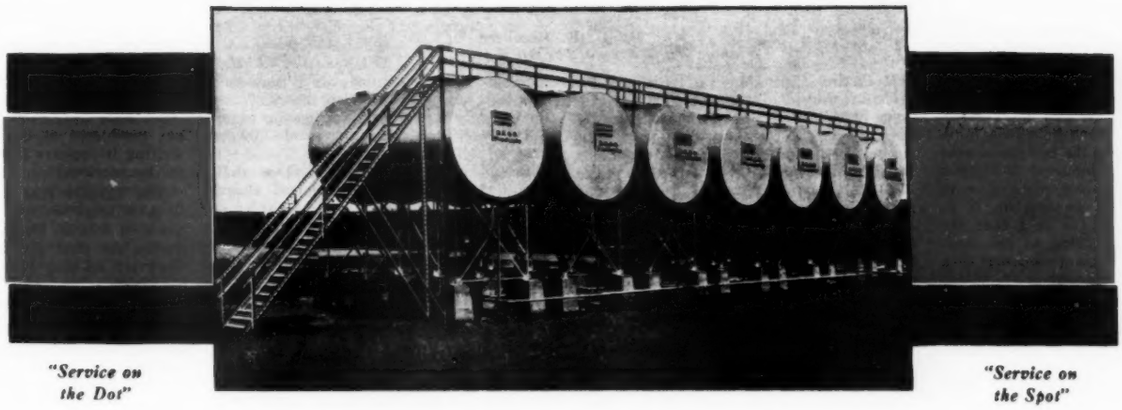
CALIFORNIA FIELD OPERATIONS BY MONTHS FOR YEAR 1930

1930—	Wells completed— No.	Wells completed— Bbls. daily	Wells— Drilling	Wells— Producing	Abandoned— Drillers	Abandoned— Producers	New rigs
January	77	103,661	494	10,386	30	35	56
February	53	28,747	482	10,180	20	17	59
March	79	45,924	408	9,533	30	27	61
April	54	42,142	413	9,589	26	26	100
May	64	34,954	431	9,443	25	21	75
June	52	42,522	410	9,446	12	25	80
July	47	33,586	435	9,440	14	54	93
August	59	53,064	433	9,497	22	15	115
September	47	52,043	470	9,543	15	51	99
October	82	60,139	437	9,523	19	13	115
November	76	53,049	419	9,547	11	14	68
December	65	34,690	370	9,454	30	22	43
Total 1930..	755	584,521			254	320	961
Total 1929..	910	1,307,496			314	212	1,306
Total 1928..	712	681,629			191	321	1,290
Total 1927..	901	479,905			281	252	1,160
Total 1926..	913	391,620			284	200	1,138
Monthly average—							
1930	63	48,710	434	9,632	21	27	80
1929	76	100,625	610	10,550	26	18	109
1928	59	56,802	512	10,823	16	27	108
1927	75	39,992	404	11,276	23	21	97
1926	76	32,635	422	11,288	24	17	95

CALIFORNIA FIELD OPERATIONS BY DISTRICTS FOR YEAR 1930

District—	Oil wells completed No.	Oil wells completed Bbls. daily	Oil wells*— Drilling	Oil wells*— Producing	Abd.— Drillers	Abd.— Producers	New rigs
Kern River	17	3,385	3	905	3	1	24
Mount Poso	24	3,041	2	72	3	1	27
Fruitvale	7	2,400	3	16	6	3	10
Round Mountain	20	4,935	4	20	3	2	26
McKittrick	3	105	1	252	0	0	1
Midway-Sunset	68	33,668	15	1,942	11	69	42
Elk Hills	1	400	0	231	3	1	1
Lost Hills-Belridge	5	80	4	194	1	5	16
Coalinga	1	10	1	732	0	14	1
Kettleman Hills	6	21,908	10	6	3	0	16
Buttonwillow Gas	0	0	1	5	0	0	8
Wheeler Ridge	0	0	0	33	0	0	0
Watsonville	0	0	0	6	0	3	0
Santa Maria	1	275	3	187	5	14	4
Capitan	7	1,120	1	2	3	0	13
Summerland	3	225	1	97	2	1	1
Elwood	31	122,312	6	39	2	1	30
Santa Barbara	2	1,150	1	1	5	2	6
Rincon	5	1,460	3	33	3	2	9
Ventura Avenue	36	51,530	23	147	2	1	29
Ventura-Newhall	10	967	16	432	24	0	32
Los Angeles-Salt Lake	0	0	0	294	2	63	0
Whittier	0	0	1	163	1	4	0
Fullerton	1	50	1	368	0	3	0
Coyote	6	2,793	3	196	1	0	6
Santa Fe Springs	148	123,916	30	447	6	32	7
Montebello	1	241	0	168	1	4	1
Richfield	16	1,795	2	204	2	9	5
Huntington Beach	10	964	3	431	5	15	7
Long Beach	142	90,288	75	883	17	15	173
Torrance	0	0	0	551	0	27	1
Dominguez	0	0	2	60	0	2	2
Rosecrans	6	2,872	2	104	4	13	5
Inglewood	5	1,137	1	217	1	1	7
Newport	0	0	0	4	2	1	2
Seal Beach	2	565	2	134	0	9	3
Potrero	14	6,880	7	13	7	3	19
Lawndale	0	0	1	8	1	0	0
Playa Del Rey	163	104,049	41	35	8	0	274
Miscellaneous drilling	0	0	165	0	117	0	156
Total	755	584,521	434	9,632	254	320	964

*Monthly average.



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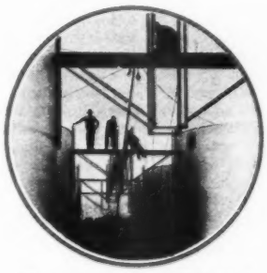

This equipment is fabricated, on the ground, and then raised into place. Its construction is very simple, indeed.

In building a walkway and stairway, build for permanence. The first cost of the B.S.&B. Safety Steel Walk Stairways is reasonably low, and this equipment will last indefinitely, without up-keep cost.

You will have a fireproof structure, with safety treads, and a practical adjunct to your tanks, etc., in that this equipment is portable, and may be adaptable to any size of tanks, or tank batteries of any height.

All of the holes which may be used in the construction of the Stairways and Walkways are punched on two-inch centers for half-inch bolts. They are made for use with tank batteries, eight or sixteen feet high, however, are adjustable to any other height or length.

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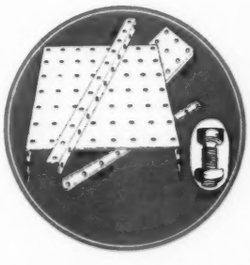

Only five different kinds of material used. It's an easy matter to assemble them—and we furnish the bolts, too.

You will have a fireproof structure of strength and safety, and a stairway and walkway that is easy to build, remove, and rebuild. There are only five different kinds of material used in the construction—Safety Walkway Sections; Angle Post; Bracing Channels; Stair Treads, and Bolts. There is no waste of materials when locations are changed.

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BARTLESVILLE ~ OKLAHOMA

Our Watchword QUICK S-E-R-V-I-C-E

Hit Hard By Insufficient Demand

North Central Texas and Panhandle Fields Held Back in Production and New Work. Important Discoveries in 1930

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

While but few new pools or extensions have been brought in in the Panhandle district during the year, and development in the old fields has been held to a minimum, especially during the last six months of the year, gas development has taken on major aspects in this district, with more attention to be focused on it in years to come due to the fact that the Panhandle district is noted as the largest gas, and helium gas producing area in the world, with thousands of potential gas producing acres yet undrilled.

Proration was first started in the Panhandle district in January of 1930, and since that time the district has been in a continuous furore, the purchasing companies cutting their nominations each month, and the producers trying to maintain nominations and estop the purchasers from disconnecting from certain leases, and cutting down production every month. In January, 1930, production was up to around 90,000 bbls. per day in the district, Gray County producing 54,500 bbls. of this amount, and in July of the same year it had jumped to around 103,000 bbls. per day. Then proration was applied in earnest starting at 80,000 bbls. per day. At a proration meeting held in Fort Worth, December 11, the allowance was cut to the drastic figure of 40,000 bbls. per day after the Prairie Oil & Gas Co. and Bartex Pipe Line Co. (Phillips Petroleum Co.) had announced that they were withdrawing as purchasers in the district. The former company had been taking approximately 5,227 bbls. per day from 84 leases, and the latter company had been connected to 23 leases taking approximately 1,260 bbls. per day.

The Wichita Falls and Ranger districts have also been muddled up most of the year because of lack of demand for crude oil, and many proration meetings have been held in an effort to continue to bring down production in these areas, and in hopes of getting all of the wells connected to by some purchasing company. The Prairie Oil & Gas Co. had been one of the largest purchasers in these two districts and when it announced its withdrawal as a crude purchaser it added to the troubles of the district from which oil was being sold below market price in order that some of the producers could meet their obligations.

In January, 1930, the Wichita Falls district showed a daily average of a little more than 97,000 bbls. whereas the present daily average has been brought down to 67,000 bbls., a cut of 30,000 bbls. per day in the district. The Ranger district showed a daily average of around 40,000 bbls. in January, 1930, and now it is down to a little over 24,000 bbls., a drop of 16,000 bbls. per day, thousands of producers in these two districts producing only 4 to 6 bbls. per day on pump.

In November there were 18,000,000 bbls. of oil in storage in the Panhandle district according to David Donoghue, technical advisor of the Central Proration Committee, the district having a daily potential of 120,000 bbls. West Central Texas (Ranger district) had a daily potential of 47,400 bbls. at the beginning of November.

Big Gas Development

The gas producing and marketing activities include 10 lines out of the Panhandle district in various directions, some of them covering great distances.

Taconian Area

The Sullivan or Taconian area, on the western side of Gray County was one of the most interesting areas opened to oil production in the Panhandle district in 1930, but so far it has not developed into a major appearing area, although the discovery well of Graham-Cree and Hoover on the Sullivan ranch, Section 136, Block 3, I.&G.N. Survey, Gray County, came in for 9,000 bbls. in 24 hours with 59,000,000 feet of gas from a granite wash pay logged at 2,990 feet. The Magnolia Petroleum Co. drilled an offset on the Latham farm for an 1,800-bbl. per day well, and the Skelly Oil Co. just completed a big well in the pool, but several other tests have been small oil producers, gas producers or dry holes, and at this writing it appears that the pool is to run to the northwest.

The Empire Gas & Fuel Co. brought in a wildcat well 6 miles west of the town of White Deer in Carson County during the first six months of 1930, the discovery making 1,256 bbls. in 21 hours from pay topped at 3,200-32 feet.

New Pool in Moore

Fifteen miles northeast of the Armstrong-Byrd Pool, Moore County, the Operators Royalty Co. and Dana Oil & Gas Co. brought in a new area during the first part of the year in Section 104, Block 3, T.&N.O. Survey, but up to date there are only two other producing wells in this area, with one other drilling, consequently that area has reflected conditions in the district.

The Danciger Oil & Refining Co. threw up a barrier against the railroad commission and the central proration committee in the latter part of the year when it obtained an injunction to prevent that commission and committee from prorating its leases, and cutting down its production in the Panhandle, consequently it has been producing its wells and leases

NORTH TEXAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BURKBURNETT—													
Daily average	9,063	9,201	9,197	9,411	9,302	9,073	8,388	8,027	7,916	7,811	7,410	7,388	
Month	280,953	257,628	285,107	282,330	288,362	272,190	258,478	248,837	237,480	242,141	222,300	229,028	3,104,834
ELECTRA—													
Daily average	11,410	11,582	11,494	11,516	11,166	11,077	11,225	10,810	10,510	10,362	10,236	10,017	
Month	353,710	324,296	356,314	345,480	346,146	332,310	347,975	335,110	315,300	321,222	307,080	310,527	3,995,470
IOWA PARK, K. M. A.—													
Daily average	4,715	4,904	4,816	4,914	4,680	5,017	5,705	5,486	5,114	4,563	4,351	4,111	
Month	146,165	137,312	149,296	147,420	145,080	150,510	176,855	170,066	153,420	141,453	130,530	127,441	1,775,548
ARCHER COUNTY—													
Daily average	17,357	17,826	18,012	19,342	19,165	19,010	17,066	15,751	14,662	13,998	13,431	12,573	
Month	538,067	499,128	558,372	580,260	594,115	570,300	529,046	488,281	439,560	433,938	402,930	389,763	6,023,760
CLAY COUNTY—													
Daily average	1,013	849	758	722	882	747	699	750	625	660	742	695	
Month	31,403	23,772	23,498	21,660	27,312	22,410	21,669	23,250	18,750	20,460	22,260	21,545	278,691
WILBARGER COUNTY—													
Daily average	25,487	25,801	24,841	24,645	24,046	23,756	22,428	21,111	17,446	17,081	16,770	15,527	
Month	790,097	722,428	770,071	739,350	745,426	712,680	695,268	654,441	523,380	529,511	503,100	481,337	7,867,089
MONTAGUE COUNTY—													
Daily average	6,411	6,427	6,462	6,664	6,857	6,738	6,806	6,304	6,325	6,145	5,808	5,503	
Month	198,741	179,956	200,322	199,920	212,567	202,140	210,986	195,424	189,750	190,495	171,240	170,593	2,325,174
YOUNG COUNTY—													
Daily average	8,435	9,690	11,352	19,499	20,549	20,981	16,116	16,634	14,122	11,493	11,518	11,372	
Month	261,485	271,320	351,912	584,970	637,019	629,430	499,596	515,654	423,660	356,283	345,540	352,532	5,229,402
BAYLOR COUNTY—													
Daily average	380	602	1,037	1,076	1,295	1,308	1,161	873	910	1,012	1,003	795	
Month	11,780	16,856	32,147	32,280	40,145	39,240	35,991	27,063	27,300	31,372	30,090	24,645	348,909
COOKE COUNTY—													
Daily average	4,821	4,446	4,057	3,792	3,584	3,531	3,227	3,110	3,250	3,122	2,824	2,616	
Month	149,451	124,488	125,767	113,760	111,104	105,930	100,037	96,410	97,500	96,782	84,720	81,096	1,287,045
FOARD COUNTY—													
Daily average	211	236	251	205	195	196	179	151	143	137	114	87	
Month	6,541	6,608	7,781	6,150	6,046	5,880	5,549	4,681	4,290	4,247	3,420	2,697	63,889
Daily average	89,303	91,564	92,277	101,786	101,721	101,434	92,950	89,007	81,013	76,384	74,207	70,684	58,481
Total 1930	2,768,393	2,563,792	2,860,587	3,053,580	3,153,351	3,043,020	2,881,450	2,759,217	2,430,390	2,367,904	2,226,210	2,191,204	32,299,098
Total 1929	2,794,619	2,412,788	2,760,705	2,729,250	2,793,286	2,759,550	3,108,990	3,128,458	2,967,270	3,015,556	2,832,930	2,958,330	34,261,732
Total 1928	2,441,002	2,247,790	2,483,100	2,465,970	2,600,559	2,687,207	2,977,993	3,151,181	2,915,790	2,987,594	2,794,890	2,957,989	32,711,865
Total 1927	2,884,736	2,621,220	2,996,367	2,885,220	3,202,703	3,064,920	3,043,332	2,993,236	2,882,790	2,708,780	2,641,140	2,680,632	34,605,076

TEXAS PANHANDLE

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
HUTCHINSON COUNTY—													
Daily average	23,856	24,124	22,503	22,162	22,573	23,123	21,708	20,510	16,590	16,927	13,492	12,838	
Month	739,536	675,472	697,748	664,860	699,763	693,704	653,418	635,810	497,700	524,737	404,760	397,978	7,285,496
CARSON COUNTY—													
Daily average	9,325	9,592	9,779	9,572	9,231	8,728	9,191	8,950	7,093	7,089	6,365	5,354	
Month	289,075	268,576	303,149	287,160	286,161	261,836	284,921	277,450	212,790	219,759	190,950	165,974	3,047,301
GRAY COUNTY—													
Daily average	51,360	53,233	55,397	61,566	73,497	72,360	66,197	67,003	54,989	55,910	52,464	51,625	
Month	1,592,160	1,490,524	1,717,307	1,846,980	2,278,407	2,170,796	2,052,107	2,077,093	1,649,670	1,733,210	1,573,920	1,600,375	21,782,549
MOORE COUNTY—													
Daily average	566	628	554	513	442	253	349	199	329	856	220	226	
Month	17,546	17,584	17,174	15,390	13,702	10,590	10,819	6,169	9,870	26,536	6,600	7,006	158,586
WHEELER COUNTY—													
Daily average	551	533	503	712	611	662	734	591	599	612	489	476	
Month	17,081	14,924	15,593	21,360	18,941	19,858	22,754	18,321	17,970	18,972	14,670	14,756	215,200
POTTER COUNTY—													
Daily average	.....	.....	.....	7	11	5	13	14	.....	13	.....	2	
Month	.....	.....	.....	210	341	157	403	434	.....	403	.....	62	2,010
Daily average	85,658	88,110	88,741	94,532	106,365	105,231	97,562	97,267	79,600	81,407	73,030	70,521	89,015
Total 1930	2,655,398	2,467,080	2,750,971	2,835,960	3,297,315	3,156,941	3,024,422	3,015,277	2,388,000	2,523,617	2,190,900	2,186,151	32,492,012
Total 1929	1,882,878	1,582,196	1,845,213	1,834,980	2,086,579	2,623,680	2,918,278	3,985,608	3,548,100	3,242,538	2,962,110	3,230,634	31,742,794
Total 1928	2,408,359	2,287,607	2,253,173	2,044,020	2,115,409	1,965,484	1,973,595	1,960,316	1,897,110	2,061,376	1,885,710	1,884,335	24,736,494
Total 1927	4,004,053	3,528,280	2,654,590	3,749,610	4,174,181	3,814,380	3,459,910	3,071,790	2,882,640	2,735,719	2,488,530	2,526,097	40,089,780
Total 1926	157,077	152,264	245,024	393,860	876,897	1,430,400	2,023,742	2,973,848	3,421,890	4,534,339	4,595,220	4,741,326	25,545,887

to capacity running its oil to a local refinery.

Young County has been the most active county in the North Texas or Wichita Falls district during the past year, also being one of the counties the hardest hit by proration, and lack of pipe line outlet, proration coming in July, 1930, first starting in the Riggs or Larimore Pool, 2 miles north of the town of New Castle. This pool had a potential of 15,000 to 17,000 bbls. per day when the Prairie Pipe Line Co., the only company serving the pool at that time, cut its runs to 1,345 bbls. daily. Drilling in this new pool advanced at a rapid rate until pipe line outlet was curtailed, and after that the pool became semidormant with but few wells drilled in.

Many wells were drilled surrounding this new pool, and production was extended on a northwest trend on the Jeffrey ranch, several miles proving good for production from the shallow pay found in this area which produced from sand encountered from 650-825 feet. One of the best extension wells drilled on this trend was Maer and Hamilton's No. 1 Jeffery in Section 53, T.E.&L. Survey, 3¾ miles northwest of the Riggs Pool. It came in producing around 30 bbls. per hour from sand logged at 812-27 feet, one of the best wells in the county, especially from the shallow sand horizon.

The Primrose Refining Co. laid a 2½-inch line into the Riggs Pool, and the Texas Pipe Line Co. laid a 4-inch line into the area November 11, taking 3,475 bbls. per day from the pool.

C. E. Beavers and others' No. 1 Furr, in Section 22, T.E.&L. Survey, 10 miles northwest of New Castle, was another extension well during the year when it came in at 100 bbls. per day from shallow sand found at 689-92 feet. It is approximately 6 miles southwest of the old Hennig Pool and opened a new pool, rather than extending production.

Probably one of the most important Young County discoveries was the well of the Panhandle Producing & Refining Co. on the Cox ranch in eastern Young County, in the Indianola Railway Survey, far from any producing area. This well came in making but a small amount of oil with over 10,000,000 feet of gas per day, and proves up more acreage to production for the county, especially in a new part of the county.

In the early part of the year Nash & Windfohr's No. 1 McCloud, in the Graham Pool, Young County, was a most phenomenal discovery, coming in for an initial production of 1,000 bbls. per hour producing from the Big Bend horizon which was logged at 3,752 feet. Several other deep tests followed the drilling in of this spectacular well, but they all proved futile, practically all of them being abandoned, although some were completed as small producers.

Cooke and Archer Counties were especially active during the year, but no especially valuable pools were found, although the Lloyd Oil Corp. opened up a new area in the southeastern part of the former county in the J. T. Strickland Survey, on the Jacobs farm. The well came in from saturated lime logged at 1,546-53 feet, producing "sweet" oil of only 25 gravity. Several other wells were drilled but the wells were either small, or dry. Another small producing well was brought in during the year in the southwestern part of Cooke County opening a new area which did not prove of much importance. This test was drilled by the Deep Rock Oil Co. on the Lawson farm in the Harriet Nail Survey, and the production came from a saturated lime found from 1,321-31 feet. The well swabbed 204 bbls. the first 24 hours, but when put on the pump did not prove as good as promised by the swabbing test. The pool has not been extended or proven active since the completion of the Deep Rock discovery.

In Coleman County

The Arcadia Refining Co. completed one of the most important finds in Coleman County in the fore part of September, 1930, when its No. 1 Golson was completed for an initial production of 164 bbls. of 43 gravity oil on a 12-hour gauge. This well is located in the I. K. Harris Survey, and extended the Burkett Pool 1 mile south. Several other good wells have been completed around it, but lack of pipe line connections is holding back activities in the extended area.

Another discovery in Coleman County, in October, 1930, was Bud Wilmot's No. 1 Hinds, just west of the town of Coleman, several miles from any producing area. It made only 30 bbls. on the pump from the Gardner sand, logged at 2,641-50 feet.

Gas in Eastland County

The Groves gas producing area in northwestern Eastland County has been one of the most active in the Ranger district during 1930, due to the fact that the Lone Star Gas Co. owns most of the acreage in the area and is drilling it up for a larger gas supply, running a 16-inch line into the area this year to take gas from the field. The best wells of the field have been brought in this year. No. 6 and No. 7 Groves of the Lone Star Gas Co. were two of the largest, one making 35,000,000 feet of gas per day and the other 62,400,000 feet per day.

Grayson County's First Oil

Grayson County had its first oil producer completed in November, 1930. This well was the Sherman Oil & Gas Co.'s No. 2 Dalton, in the Pottsboro area, northwest of the town of Sherman. It encountered an oil sand from 920-31 feet, registered an increase at 931-33 feet and was completed at the latter depth, pumping 65 bbls. in 13 hours.

NORTH CENTRAL TEXAS

Summary of Completed Wells in 1930

County—	Comp.	Prod.	Dry	Gas
Archer	422	10,363	232	0
Baylor	48	3,180	28	0
Brown	194	2,882	131	12
Burnett	1	0	1	0
Callahan	112	399	86	11
Clay	25	205	18	1
Coleman	178	4,812	106	17
Comanche	22	48	10	8
Cooke	86	1,319	56	0
Denton	6	0	6	0
Eastland	108	2,076	52	25
Erath	21	0	10	11
Fannin	1	0	1	0
Foard	5	79	3	1
Grayson	11	60	9	0
Haskell	5	0	4	1
Hood	2	0	2	0
Jack	52	3,046	19	3
Johnson	1	0	1	0
Lampass	2	0	2	0
McCulloch	2	0	2	0
Montague	48	1,721	19	1
Mills	1	0	1	0
Palo Pinto	53	384	23	16
Parker	3	0	3	0
San Saba	1	0	1	0
Shackelford	133	2,411	86	3
Stephens	67	3,995	22	18
Tarrant	1	0	1	0
Throckmorton	42	32	36	2
Wichita	209	7,478	80	0
Wilbarger	171	13,340	56	0
Wise	1	0	1	0
Young	875	80,670	516	3
Total 1930	2,909	138,500	1,624	133
Total 1929	4,105	198,397	1,991	147
Difference	1,196	59,897	367	14

Completions by Months

	Comp.	Prod.	Dry	Gas
January	265	12,218	127	9
February	200	6,742	106	6
March	331	14,639	179	18
April	291	33,894	156	9
May	334	15,739	166	17
June	307	12,889	171	14
July	284	19,538	151	8
August	277	7,411	173	12
September	156	3,352	102	7
October	155	2,472	100	13
November	147	4,729	96	8
December	162	4,876	97	12
Total 1930	2,909	138,500	1,624	133

PANHANDLE TEXAS

Summary of Completed Wells in 1930

County—	Comp.	Prod.	Dry	Gas
Carson	79	7,650	8	36
Cochran	1	0	1	0
Collingsworth	2	0	2	0
Childress	1	0	1	0
Donley	2	0	2	0
Gray	306	159,978	30	30
Hockley	1	0	1	0
Hutchinson	78	9,225	8	17
Hartley	1	0	0	1
Lipscomb	1	0	1	0
Lamb	1	0	1	0
Moore	15	1,085	2	9
Motley	2	0	2	0
Potter	6	0	0	6
Randall	1	0	1	0
Roberts	1	0	1	0
Wheeler	89	935	11	73
Total 1930	587	178,873	72	172

Completions by Months

	Comp.	Prod.	Dry	Gas
January	36	11,710	6	11
February	35	13,110	7	8
March	24	4,355	4	11
April	38	15,104	6	9
May	73	39,386	7	17
June	65	23,028	5	19
July	53	11,346	1	18
August	80	27,400	8	25
September	68	12,264	10	22
October	50	12,423	7	12
November	33	5,920	4	3
December	32	2,827	7	17
Total 1930	587	178,873	72	172
Total 1929	560	278,953	70	139
Difference	27	100,080	2	33
Total 1928	396	68,148	89	100

AWARD AVIATION CONTRACT

Contracts totaling over 1,500,000 gallons of Stanavo aviation gasoline were recently awarded by the United States Army Air Corps. The exact figure was 1,629,000 gallons and deliveries will be effected by the Standard Oil Co. of New Jersey, Standard Oil Co. of Indiana, and the Humble Oil & Refining Co. in the eastern, midwestern and southern zones, respectively.

Among the delivery points specified are the government laboratories at Wright and Langley Fields, and Selridge Field, where the first pursuit group are flying the army's highest powered fighting planes.

The contracts called for a fighting grade gasoline of 87 octane knock rating embodying the new limitations on vapor pressure as specified in Army Specification Y3557-B, a very difficult one for the manufacturers to meet.

CENTRAL TEXAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
TAYLOR COUNTY—													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	136	112	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,080	3,472	7,552
RUNNELS COUNTY—													
Daily average	16	15	17	10	14	16	11	16	11	11	20	133	
Month	496	420	527	304	434	480	341	496	330	341	600	4,123	8,892
COLEMAN COUNTY—													
Daily average	5,045	4,969	4,972	4,205	3,629	3,789	2,873	2,902	2,674	2,445	2,446	2,555	
Month	156,395	139,132	154,132	126,156	112,499	113,670	89,063	89,962	80,220	75,795	73,380	79,205	1,289,609
COMANCHE COUNTY—													
Daily average	160	195	160	170	156	377	140	142	136	121	122	124	
Month	4,960	5,460	4,960	5,097	4,836	11,310	4,340	4,402	4,080	3,751	3,660	3,844	60,700
STEPHENS COUNTY—													
Daily average	5,313	5,862	6,062	6,206	6,041	5,815	5,620	5,233	5,365	5,194	4,751	5,008	
Month	164,703	164,136	187,922	186,188	187,271	174,480	174,220	162,223	160,950	161,014	142,530	155,248	2,020,885
EASTLAND COUNTY—													
Daily average	5,059	5,271	4,977	5,324	5,436	5,514	5,227	5,202	5,163	4,713	4,157	3,788	
Month	156,829	147,588	154,287	159,711	168,516	165,420	162,037	161,262	154,890	146,103	124,710	117,428	1,818,781
BROWN COUNTY—													
Daily average	8,263	7,860	6,904	6,732	6,543	6,659	6,078	5,649	5,460	5,137	5,292	4,873	
Month	256,153	220,080	214,024	201,960	202,833	199,770	188,418	175,119	163,800	159,247	158,760	151,063	2,291,227
CALLAHAN COUNTY—													
Daily average	3,342	3,720	3,524	3,993	3,852	3,849	3,033	3,152	3,107	3,058	3,007	2,859	
Month	103,602	104,160	109,244	119,784	119,413	115,470	94,023	97,712	93,210	94,798	90,210	88,629	1,230,254
THROCKMORTON COUNTY—													
Daily average	703	844	1,158	1,213	1,062	1,060	789	699	758	724	665	619	
Month	21,793	23,632	35,898	36,388	32,922	31,800	24,459	21,669	22,740	22,444	19,950	19,189	312,884
JACK COUNTY—													
Daily average	4,079	4,290	4,146	3,821	3,495	3,564	2,572	3,335	2,255	1,980	1,976	1,549	
Month	126,449	120,120	128,526	114,632	108,345	106,920	79,732	103,385	67,650	61,380	59,280	48,019	1,124,438
HASKELL COUNTY—													
Daily average	61	66	55	46	59	56	58	44	42	37	36	32	
Month	1,891	1,848	1,705	1,383	1,829	1,680	1,736	1,364	1,260	1,147	1,080	992	17,915
PALO PINTO COUNTY—													
Daily average	654	740	642	649	643	632	530	576	512	453	361	417	
Month	20,274	20,720	19,902	19,484	19,933	18,960	16,430	17,858	15,360	14,043	10,830	12,927	206,639
SHACKELFORD COUNTY—													
Daily average	8,047	6,500	6,262	6,652	6,741	6,186	7,072	7,021	6,678	5,163	4,896	5,009	
Month	249,457	182,000	194,122	199,567	208,971	185,580	219,232	217,651	200,340	160,053	146,880	155,279	2,319,132
JONES COUNTY—													
Daily average	2,149	2,207	1,322	1,445	1,387	1,354	1,367	1,365	1,385	1,422	1,394	1,391	
Month	66,619	61,796	40,982	43,336	42,997	40,620	42,377	42,315	41,550	44,082	41,820	43,121	551,615
ERATH COUNTY—													
Daily average	228	239	241	218	238	216	252	244	261	252	248	243	
Month	7,068	6,692	7,471	6,540	7,378	6,480	7,812	7,564	7,830	7,812	7,440	7,533	87,620
Daily average	43,119	42,779	40,442	40,684	39,296	39,088	35,620	35,580	33,807	30,710	29,507	28,712	36,570
Total 1930	1,336,689	1,197,784	1,253,702	1,220,510	1,218,176	1,172,640	1,104,220	1,102,980	1,014,210	952,010	885,210	890,072	13,348,203
Total 1929	1,574,423	1,368,304	1,515,249	1,451,880	1,539,057	1,471,350	1,517,636	1,522,782	1,532,730	1,542,932	1,449,300	1,484,776	17,970,419
Total 1928	1,402,754	1,281,096	1,465,029	1,422,150	1,477,119	1,473,111	1,520,247	1,502,756	1,582,050	1,447,832	1,463,700	1,568,259	17,736,103
Total 1927	1,949,063	1,903,412	2,245,702	2,109,300	2,192,351	1,967,640	1,705,558	1,597,523	1,519,230	1,548,698	1,464,750	1,403,029	21,606,256

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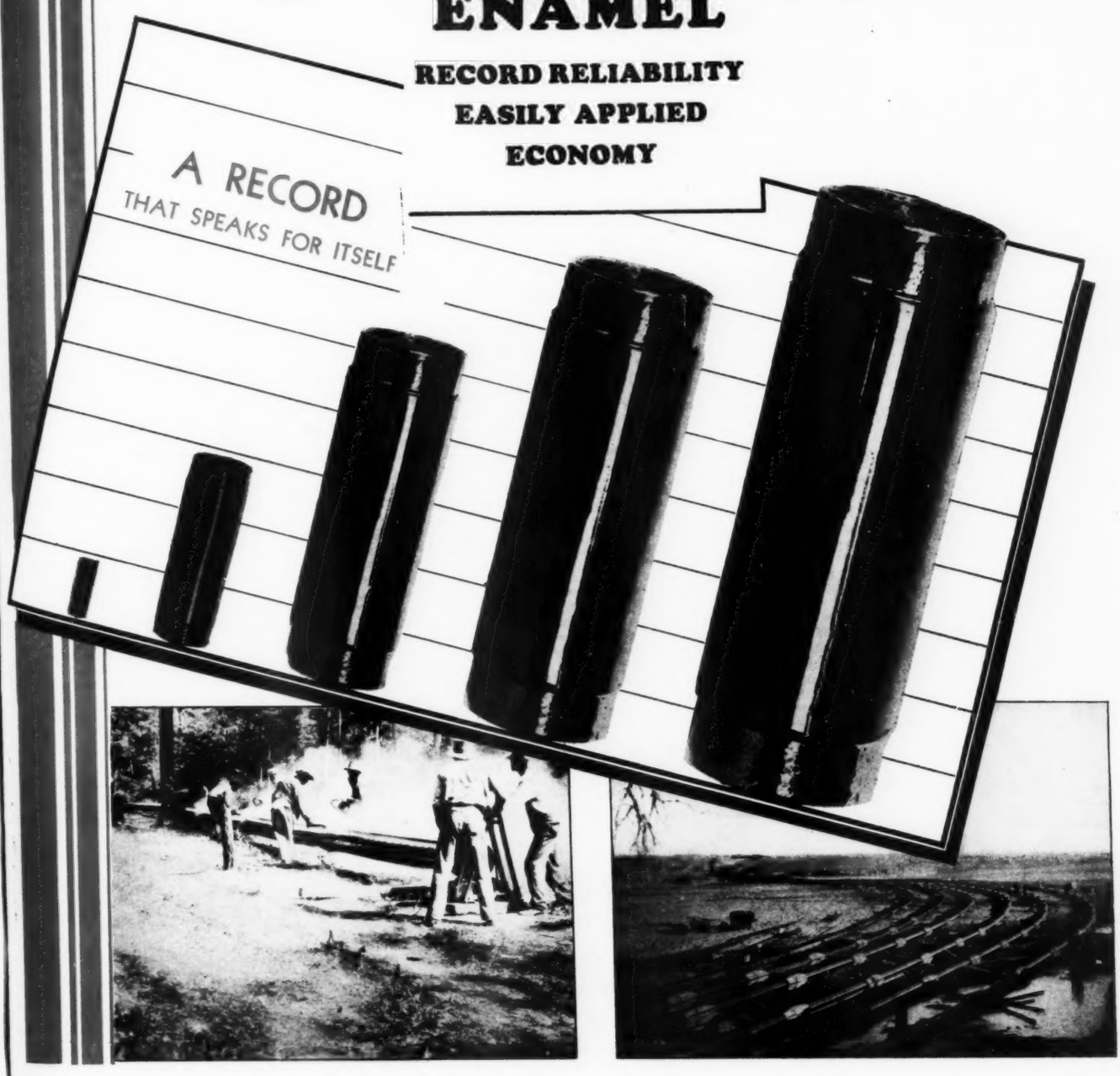

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May Be World's Largest Oil Field

Opening of Joiner Pool in Rusk County, Texas, in 1930 Followed by Discoveries of Importance. Big Development in Store

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

Approximately one year after the Van Pool, in Van Zandt County, was completed C. M. Joiner and associates opened up another Woodbine producing area in East Central Texas, this pool being on the eastern side of the salt basin, and on the west flank of the Sabine uplift, this part of the basin having been generally considered by geologists as unfavorable for production.

This new well, located on the Mrs. Daisy Bradford farm in the Juan Ximenes Survey was completed in the early part of October, 1930, for an initial production of around 200 bbls., the well producing steadily to date, but daily production varying, the well producing a total of 4,239 bbls. during the 31 days of December. Top of the Woodbine showed at 3,592 feet when a drill stem test was made, a substantial amount of 37.5 gravity oil showing up in that test. The well was completed at a total depth of 3,594 feet. Many were skeptical in regard to the area producing a major pool, and while leasing and royalty buying started at great speed, major companies were slow in entering the area, and buying protection or taking acreage. Some blocks had been taken in previous years and the leases on these blocks have not yet expired. Some of the blocks were taken recently also, before the discovery of the Joiner Pool.

Many locations were staked in the pool, due to the fact that the acreage is greatly cut up, with independent operators holding practically all of it, and desirous of bringing in this high gravity "sweet" crude which appears to have a ready sale, and is not far distant from refineries that are in need of oil, and not a great distance from the Gulf Coast.

Second Well Started at 3,000 Bbls.

One well was drilled a short distance to the northeast of the Joiner discovery and proved a failure, while another to the southeast proved dry; east, north and south offsets also proved but small wells, but if any doubt was left in the minds of the skeptics about the pool becoming a major one, and producing large wells, this doubt was immediately dispelled when Frank Foster and associates drilled in their No. 1 Ashby, about 1 mile to the west of the Joiner well. This well came in for an initial production of around 3,000 bbls. per day at a total depth of 3,618 feet. The Woodbine sand was topped at 3,597 feet. Gravity of the oil in this well tested 40.5 A.P.I. Major companies and independents alike began to see the possibilities of this part of the salt basin after the Ashby well came in, and from that time until another well was brought in by Ed W. Bateman, 10 miles to the north, leasing has been gaining speed in the area, until at the present time when excitement in the district is at a fever heat due to one more good showing in still another area in the district and on a northern trend which is being "played" by a larger number of independents and companies than any other area or district in Texas for a long time in the past.

After the Joiner well was completed H. L. Hunt of Shreveport acquired leases in the field and started drilling, constructing 2½ miles of 4-inch line to the I. & G. N. Railroad and erecting a loading rack at that place to ship crude to Louisiana. This was the first line to be put in operation in the area, although a second 4-inch line was constructed by W. A. Moncrief and associates from the Foster and associates' No. 1 Ashby, and a loading rack constructed near the Hunt loading rack. Oil is now moving through this line and is being shipped to the Louisiana Oil & Refining Co.'s (Cities Service Co.) refinery at Shreveport.

Ed W. Bateman's No. 1 Mrs. Lou Della Crim, located in the Elbridge G. Sevier Survey, 10 miles to the north of the Joiner Pool, was another wildcat discovery which was completed on December 28, 1930, causing more interest in this part of the basin, rekindling excitement which had become slightly settled. This well cored saturated sand with streaks of shale at 3,629½ feet and 6⅝-inch casing was set at 3,624 feet, and total depth of the hole is 3,642 feet. A total of 12½ feet of sand was cored. The well came in flowing 308 bbls. in 20 minutes, making it look good for an estimated 22,000 bbls. per day, the largest well on the east side of the basin, and possibly larger than any well of the Van Pool which begins to look like a small pool compared to this area.

Whether or not the Joiner Pool and the Bateman area will be connected by production, and prove one pool, or whether the Bateman area means another separate pool, remains to be seen when the intervening acreage is tested. Tests are already starting on different leases between the two producing areas and it will not be long before the oil fraternity knows just how large this area will be.

Mr. Bateman has sold his well and block to the Humble Oil & Refining Co. and Gulf Production Co., and the former company will no doubt lay a line to the well at once, since it has a 10-inch trunk line running within about 10 miles of the well to the north, from the Van Pool to Louisiana. This line commenced running oil from the Van Pool to Morgan Station in Louisiana on December 27, now running 10,000 bbls. per day to the latter place where the Standard of Louisiana company's line carries the oil on to its Baton Rouge refinery.

May Be World's Largest Pool

Nineteen miles north of the Bateman well, J. E. Farrell, Arkansas Fuel Oil Co. and others have a test on the Lathrop farm in the William Robinson Survey, Gregg County, which looks like a potential producer in view of the fact that it cored 4 feet of saturated sand from 3,569-73 feet and is now shut down with casing cemented. Still greater excitement was caused in the area when this well made this saturated sand showing, and it now looks as if East Central Texas was located over a sea of oil, although many are of the opinion that the pools will be spotted due to these wells producing from sand lenses which cover but small areas in various locations along the west flank of the Sabine uplift, and along an old shore line. Later tests between the three producing areas will prove just whose theory is correct, and whether or not a field 29 miles long is to be proven for this district. It now looks as if this part of the East Texas salt basin will produce the largest pool in the world, the oil being sweet and of high gravity. Acreage is being leased, and royalty purchased in the wildest manner beyond belief, and due to the fact that companies have been slow in entering the area, they are now paying top prices for protection acreage.

The Southern Crude Oil Purchasing Co., Magnolia Petroleum Co., Sinclair Oil & Gas Co., Pure Oil Co., Mid-Kansas Oil & Gas Co., Gulf Production Co. and The Texas Company have held blocks in the area for some time, but other acreage is being purchased by all companies, although it is practically impossible to obtain blocks since these new discoveries have been made.

Wildcat Record of 1930

Many wildcat tests have been drilled in various parts of East Central Texas during the year, several of the most prominent, and especially promising from a geological standpoint failing in finding production in the Woodbine sand. The Blackfoot area, Anderson County, tested by the Humble Oil & Refining Co., also by Roeser and others, has proven a failure so far, and Shell Petroleum Corp.'s Larue block, Henderson County, an especially interesting and promising area was another disappointment, one test drilled by that company proving a dry hole. Another test was drilled in a promising area north of Athens in Henderson County, but it too failed to find production. Areas in Smith, Van Zandt and neighboring counties were also tested and found dry, but these failures only tended to slow activity down for several months, and since the new discoveries in Rusk County many other tests will no doubt be drilled during the following months all over the district which will probably be the most active in the State of Texas during 1931.

Developing Van Pool

The Van Pool, Van Zandt County, has been slowly and systematically drilled during the year there, now being slightly

(Continued on Page 218)

EAST CENTRAL TEXAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BOGGY CREEK—													
Daily average	3,339	3,525	3,503	3,578	3,615	3,612	3,647	3,744	3,669	3,246	2,913	2,815	
Month	103,515	98,700	108,590	107,350	112,060	108,371	113,060	116,069	110,065	100,630	87,380	87,269	1,253,059
CEDAR CREEK—													
Daily average	54	47	49	61	47	33	43	47	42	50	46	53	
Month	1,670	1,330	1,530	1,840	1,465	988	1,335	1,456	1,270	1,555	1,395	1,645	17,479
CURRIE—													
Daily average	379	368	372	385	357	319	285	282	305	309	306	288	
Month	11,745	10,311	11,529	11,553	11,063	9,581	8,848	8,740	9,165	9,595	9,190	8,928	120,249
HILL COUNTY—													
Daily average	81	56	45	45	13	34	35	35	32	30	30	30	
Month	2,522	1,575	1,395	1,350	405	1,020	1,085	1,085	960	930	893	928	14,143
MEXIA—													
Daily average	4,617	4,377	4,202	4,195	4,273	4,229	4,233	4,213	4,097	4,016	3,917	3,326	
Month	143,140	122,542	130,275	125,853	132,467	126,862	131,211	130,611	122,921	124,483	117,517	103,111	1,510,993
MINERVA—													
Daily average	565	553	484	470	567	564	570	543	545	545	544	483	
Month	17,500	15,470	14,990	14,100	17,572	16,921	17,676	16,885	16,350	16,895	16,330	14,967	195,656
NIGGER CREEK—													
Daily average	256	222	194	212	211	188	196	172	149	165	181	169	
Month	7,950	6,230	6,008	6,365	6,535	5,636	6,090	5,355	4,470	5,120	5,425	5,239	70,425
POWELL—													
Daily average	6,584	6,278	5,883	5,853	5,832	5,782	5,677	5,149	5,362	5,320	5,368	5,261	
Month	204,101	175,788	182,377	175,569	180,799	173,466	175,979	159,535	160,859	164,928	161,036	163,087	2,077,524
RICHLAND—													
Daily average	303	269	239	230	236	220	196	150	123	161	155	129	
Month	9,395	7,525	7,420	6,905	7,325	6,600	6,085	4,660	3,695	5,000	4,655	4,001	73,266
RUSK—													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	129	197	620	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,990	5,905	19,227	29,122
THRALL—													
Daily average	87	426	73	38	42	41	40	40	41	40	40	35	
Month	2,685	11,921	2,270	1,146	1,294	1,227	1,240	1,242	1,230	1,250	1,200	1,090	27,795
VAN—													
Daily average	4,407	7,202	10,322	18,421	22,493	25,160	24,869	25,272	25,968	27,965	27,614	27,048	
Month	136,625	201,663	319,990	552,625	697,276	754,792	770,942	783,444	779,042	866,909	828,431	838,483	7,559,222
WORTHAM—													
Daily average	925	907	885	864	846	814	829	567	631	627	621	585	
Month	28,675	25,400	27,425	25,911	26,240	24,422	25,705	17,575	18,920	19,425	18,635	18,135	276,444
Daily average	21,597	24,230	26,251	34,352	38,532	40,996	40,621	40,214	40,964	42,603	41,932	40,842	36,154
Total 1930	669,523	678,455	813,799	1,030,567	1,194,501	1,229,886	1,259,256	1,246,657	1,228,947	1,320,710	1,257,992	1,266,110	13,196,003
Total 1929	675,021	579,471	666,569	605,389	608,505	577,820	600,851	582,362	549,000	580,595	536,912	651,062	7,213,557
Total 1928	797,384	727,284	780,967	727,455	736,122	706,269	713,628	723,016	711,450	709,120	657,810	705,002	8,695,507
Total 1927	1,479,568	398,208	1,442,554	1,254,690	1,066,028	1,032,720	1,002,230	960,659	873,720	929,845	856,470	865,334	13,162,026
Total 1926	1,928,851	1,759,548	1,822,614	1,763,970	1,703,853	1,557,780	1,662,437	2,198,365	1,865,970	1,731,598	1,553,890	1,734,047	21,287,323

Oklahoma's Flood of New Production

Initial Crude Output in 1930 Equal to Combined Initial of Any Previous Four Years. Important New Pools and Extensions

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The world-wide depression in business in 1930 and its effect on the petroleum industry seriously hurt the oil business in Oklahoma. It did not have much effect on drilling operations as the 3,466 wells completed in the State last year represented a decline of only 147 from the year before, an average of only 12 wells per month. The tremendous initial production of wells in the Oklahoma City Field made severe curtailment of production necessary to stave off a ruinous overproduction and this curtailment, backed by the orders of the state corporation commission, kept crude oil output down to something approaching the steadily declining demand during the year. In 1930 Oklahoma produced less oil than in 1929, 1928 or 1927. Its total crude oil output last year was 216,114,591 bbls., while in other recent years production was as follows: 252,229,474 bbls. in 1929, 247,500,851 bbls. in 1928, 276,022,024 bbls. in 1927.

The Seminole Field last year produced 66,217,239 bbls. from its various pools including Seminole City, East Seminole, Little River, East Little River, Bowlegs, Earlsboro, East Earlsboro, South Earlsboro, Searight, Mission, Maud and Carr City. In 1929 the same pools produced 101,391,557 bbls. The St. Louis-Pearson Field fell off from 30,815,602 bbls. in 1929 to 11,566,947 bbls. in 1930. In all parts of the State outside of Oklahoma City the slump in production was noted with few exceptions.

The Oklahoma City Field was held down to 34,603,067 bbls., while in 1929 it produced under severe restrictions only 8,709,727 bbls. What Oklahoma City could have produced in 1930 is incalculable, but there was no time in the year when its potential production could have been marketed. Wells with a potential initial production of 50,000 bbls. were common; one well was rated at 92,000 bbls., and toward the last of the year so many big wells had come in that gushers no longer thrilled the oil public. A total of 628 wells was completed in Oklahoma County in 1930 including 16 dry holes and 23 wells classed as gas wells. Most of the dry holes were wildcat and semi-wildcat ventures in the county. At the close of the year the Oklahoma City Pool had been proven to the extent of more than 8,000 acres with its limits yet undefined with the exception of the south or southeast end, and up to the close of the year it had produced about 5,400 bbls. to the acre. The field was extended to within the corporate limits of Oklahoma City, where drilling on town lots was conducted and wells of enormous initial production were reported. Some of these wells endangered the safety of the city until they were placed under full control. It is believed that the whole city overlies an oil field, so it is likely that much of the productive acreage of the field will never be drilled.

Proration Was a Necessity

The present degree of stabilization of crude oil production in Oklahoma was not achieved over night, but represents efforts of the past four years, by large and small producers alike, aided by the State of Oklahoma and its laws. The object of the curtailment plan was to reduce daily production to a point where it would meet the requirements of refiners. Curtailment was resumed at the beginning of the year and continued throughout. The actual

OKLAHOMA

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
WASHINGTON COUNTY:													
Daily average	4,971	5,158	5,169	5,172	4,987	5,015	4,972	4,924	4,784	4,806	4,787	4,711	
Month	154,101	144,424	160,239	155,160	154,597	150,450	154,132	152,644	143,520	148,986	143,610	146,041	1,807,904
NOWATA COUNTY:													
Daily average	4,916	5,673	5,429	5,427	5,578	5,591	5,576	5,494	4,697	5,936	5,926	5,832	
Month	152,396	158,844	168,299	162,810	172,918	167,730	172,856	170,314	140,910	184,016	177,780	180,792	2,009,665
ROGERS COUNTY:													
Daily average	2,188	2,047	2,055	2,060	2,128	2,163	2,106	1,734	1,835	2,024	2,017	1,962	
Month	67,828	57,316	63,705	61,800	65,968	64,890	65,286	53,754	55,050	62,744	60,510	60,822	739,673
OSAGE AND EASTERN KAY COUNTIES:													
Burbank—													
Daily average	16,738	16,781	16,245	16,111	16,256	16,115	15,825	15,691	14,954	15,319	14,691	13,316	
Month	518,878	469,868	503,595	483,330	503,936	483,450	490,575	486,421	448,620	474,889	440,730	412,796	5,717,038
Osage, outside Burbank—													
Daily average	23,109	22,695	22,934	22,711	22,915	22,874	21,984	24,319	24,817	24,396	23,747	22,562	
Month	716,379	635,460	710,954	681,330	710,365	686,220	681,504	660,889	744,510	756,276	712,410	699,422	8,395,719
TULSA AND WAGONER COUNTIES:													
Bird Creek, Owasso, etc.—													
Daily average	3,111	3,230	3,209	3,203	3,194	3,201	3,167	3,152	3,060	3,152	2,957	2,893	
Month	96,441	90,440	99,479	96,090	99,014	96,030	98,177	97,712	91,800	97,712	88,710	89,683	1,141,288
Red Fork, Sand Springs, Turkey Mountain, Bruner—													
Daily average	1,135	1,202	1,133	1,105	1,116	1,098	1,076	1,110	1,009	992	991	983	
Month	35,185	33,656	35,123	33,150	34 596	32,940	33,356	34,410	30,270	30,752	29,730	30,473	393,641
Bixby, Leonard—													
Daily average	867	1,453	866	832	826	819	826	826	820	853	1,012	981	
Month	26,877	40,684	26,846	24,960	25,606	24,570	25,606	25,606	24,600	26,443	30,360	30,411	332,569
Broken Arrow, Coweta—													
Daily average	919	914	933	944	926	931	819	652	789	780	808	790	
Month	28,489	25,592	28,923	28,320	28,706	27,930	25,389	20,212	23,670	24,180	24,240	24,490	310,141
TULSA, OKMULGEE AND MUSKOGEE COUNTIES:													
Okmulgee and Beggs—													
Daily average	2,474	2,411	2,423	2,386	2,134	2,092	2,249	2,237	2,113	2,033	1,947	1,902	
Month	76,694	67,508	75,113	71,580	66,154	62,760	69,719	69,347	63,390	63,023	58,410	58,962	802,660
Mounds—													
Daily average	1,659	1,628	1,533	1,489	1,442	1,444	1,436	1,152	1,168	1,324	1,309	1,287	
Month	51,429	45,584	47,528	44,670	44,702	43,320	44,516	35,712	35,040	41,044	39,270	39,897	512,707
Bald Hill and Haskell—													
Daily average	2,283	2,290	2,317	2,376	2,151	2,133	2,348	2,364	3,318	3,221	2,206	2,189	
Month	70,773	64,120	71,827	71,280	66,681	63,990	72,788	73,284	69,540	68,851	66,180	67,859	827,173
Morris, Boynton and Cole—													
Daily average	1,991	1,724	1,914	1,810	1,751	1,710	1,791	1,624	1,699	1,530	1,426	1,417	
Month	61,721	48,272	59,334	54,300	54,281	51,300	55,521	50,344	50,970	47,430	42,780	43,927	620,180
OKMULGEE, OKFUSKEE, SEMINOLE AND POTTAWATOMIE COUNTIES:													
Seminole City—													
Daily average	23,280	22,018	19,983	20,401	18,804	21,956	18,917	14,996	14,469	13,950	13,593	13,730	
Month	721,680	616,504	619,473	612,030	582,924	658,680	586,427	464,876	434,070	432,450	407,790	425,630	6,562,534
East Seminole—													
Daily average	4,748	3,819	3,462	3,525	3,503	3,056	2,607	2,857	2,229	2,162	2,056	1,984	
Month	147,188	106,932	107,322	105,750	108,593	91,680	80,817	88,567	66,870	67,022	61,680	61,504	1,093,925
Bowlegs—													
Daily average	23,666	21,512	20,149	20,157	18,140	21,422	18,773	14,499	14,728	14,442	13,585	13,265	
Month	733,646	602,336	624,619	604,710	562,340	642,660	581,963	449,469	441,840	447,702	406,950	411,315	6,509,450
Little River—													
Daily average	64,759	64,790	56,804	58,362	52 103	51,763	43,937	36,758	37,414	36,676	35,064	33,348	
Month	2,007,529	1,814,120	1,760,924	1,750,860	1,615,193	1,552,890	1,362,047	1,139,498	1,122,420	1,136,956	1,051,920	1,033,788	17,348,145
Earlsboro—													
Daily average	97,133	74,370	75,812	75,075	76,084	78,935	60,955	47,528	47,925	48,829	43,977	43,282	
Month	3,011,129	2,082,360	2,350,172	2,252,250	2,358,604	2,368,050	1,889,605	1,473,368	1,437,750	1,513,699	1,319,310	1,341,742	23,398,033
Searight—													
Daily average	7 986	8,262	9,634	10,575	11,504	10,961	9,398	7,548	7,283	6,929	6,442	5,642	
Month	247,566	231,364	298,654	317,250	356,624	328,830	291,338	233,988	218,490	214,799	193,260	174,902	3,107,065
Mission—													
Daily average	14,833	13,604	12,381	12,033	11,910	11,533	9,045	6,749	6,867	6,699	6,443	6,229	
Month	459,823	380,912	383,811	360,990	369,210	345,990	280,395	209,219	206,010	207,669	193,290	193,099	3,590,418
Carr City—													
Daily average	8,492	9,253	9,785	8,319	9,574	7,773	6,294	6,296	8,175	9,197	11,729	12,979	
Month	263,252	259,084	303,335	249,570	296,794	233,190	195,114	195,176	245,250	285,107	351,870	402,349	3,280,091
Maud—													
Daily average	7,163	5,864	5,893	5,286	5,054	4,471	4,088	3,540	3,061	3,289	2,992	2,879	
Month	222,053	164,192	182,683	158,580	156,674	134,130	126,728	109,740	91,830	101,959	89,760	89,249	1,627,578
Total Seminole Field—													
Daily average	252,060	223,493	213,903	213,732	206,676	211,830	174,014	140,771	142,151	142,173	125,861	133,338	
Month	7,813,860	6,257,804	6,630,993	6,411,990	6,406,956	6,356,100	5,394,434	4,363,901	4,264,530	4,407,363	3,775,830	4,133,478	66,217,239
Allen—													
Daily average	24,207	21,816	19,092	20,035	21,343	20,378	17,863	15,493	15,478	14,191	13,859	12,861	
Month	750,417	610,848	591,852	601,050	661,633	611,340	553,753	480,283	464,340	439,921	415,770	398,691	6,579,898
Konawa—													
Daily average	3,019	3,375	8,395	8,445	15,973	22,266	22,307	18,071	17,378	18,101	14,465	15,050	
Month	93,589	94,500	260,245	253,350	495,163	667,980	691,517	560,201	521,340	561,131	433,950	466,550	5,099,516
Asher-Wanette—													
Daily average	2,580	2,283	2,301	2,093	3,251	5,263	4,813	7,078	9,174	8,412	12,065	8,971	
Month	79,980	63,924	71,331	62,790	100,781	157,890	149,203	219,418	275,220	260,772	361,950	278,101	2,081,360

(Table Continued on Next Page)

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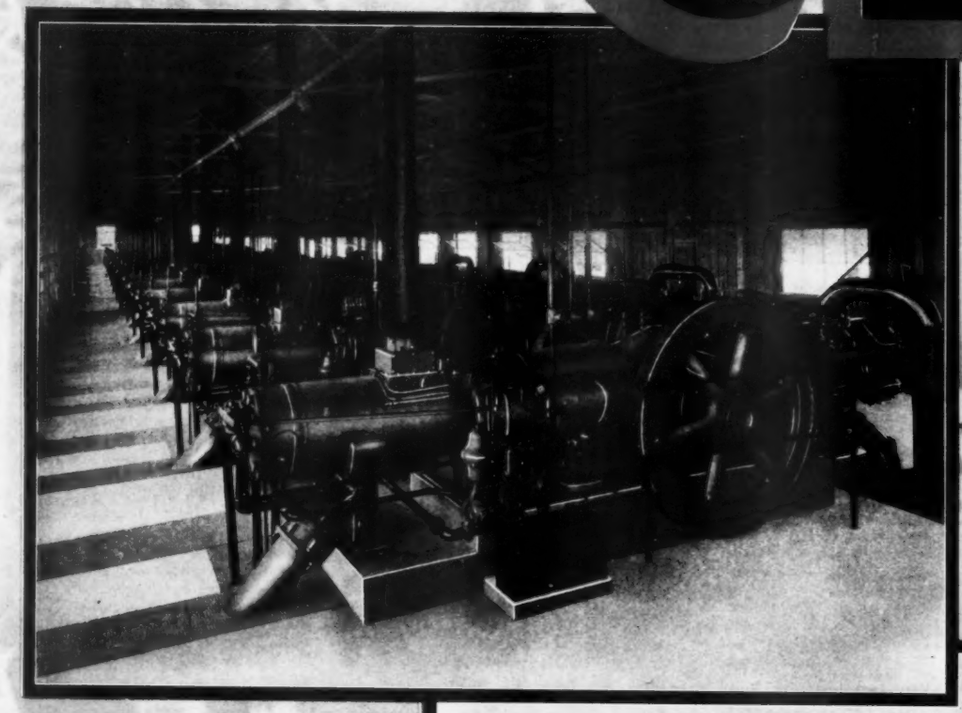

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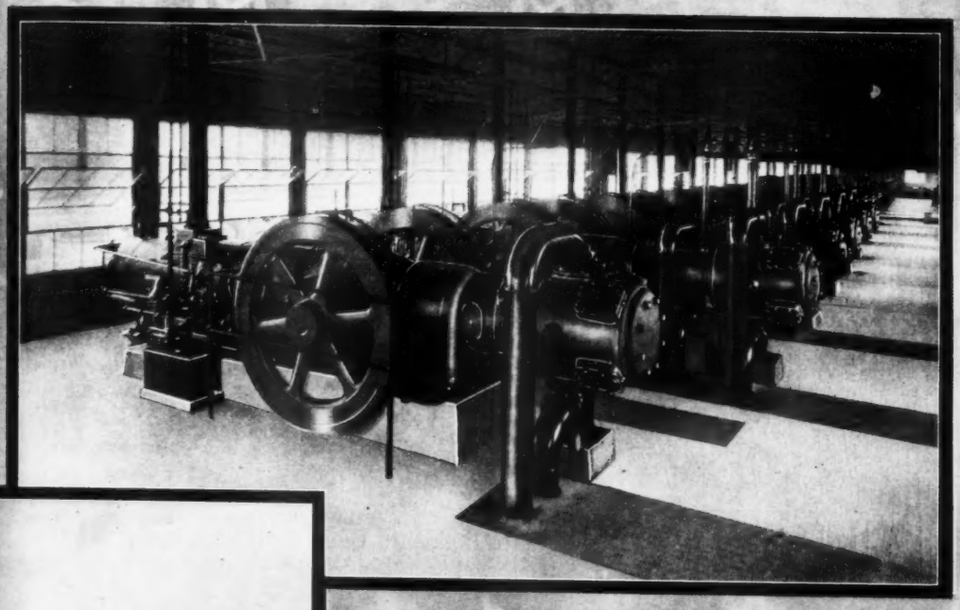

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COMPRESSORS

potential production of the State was estimated at more than 1,000,000 bbls. a day from the middle of the year to the end.

Operators with flush production in all fields in the State co-operated with the state-wide proration committee in keeping production down to requirements and every recommendation of the committee representing the Mid-Continent Oil & Gas Association was adopted without serious objection and on petition of oil men was made an order by the state corporation commission. Those that did object to curtailment during the year followed the lead of the majority. Some protest was made to the Oklahoma Corporation Commission by an oil company here and there and some of these companies carried the case to the state supreme court, which decided against the objectors. A test case is to be tried in the federal court the first part of January. A deeper cut was made in the allowable production of the State under the corporation commission's order for the last quarter of the year.

The initial production of Oklahoma in 1930 exceeded the combined initial production of any other four years in the State's oil history, while the number of wells completed during the year was less than any other year in the last 20 years. While the enormous initial production of 5,628,234 bbls. broke all records in a like period, only 3,466 wells were completed, of which 2,061 were oil producers. Some of this initial production came from wells that were only produced part of the 24 hours, owing to the lack of facilities for handling the oil. During the last quarter of the year a large number of the completed wells in the Oklahoma City Field were underproduced and the pipe line companies were attempting to bring these wells even with the allowable production under the proration plan.

High Spots in Oklahoma City

The Oklahoma City Field was the outstanding area in the State during the year. A total of 628 wells were completed in the field, 589 were oil wells, 23 gas wells and 16 were dry holes. The 589 oil wells had an initial production of 4,774,757 bbls., an average of better than 8,100 bbls. per well. The production of oil in the field created difficult problems, with sensational wild wells, gas fires and big wells following one another in all parts of the field, which spread out in a north and south direction, extending over into Cleveland County on the south and the northwest side overlapping into the capital city, causing a town lot drilling campaign on small tracts.

In the south end of the Oklahoma City Field one of the most spectacular wells in the State ran wild for 11 days, starting March 11. It was estimated to

OKLAHOMA (Continued)

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
Pearson-St. Louis—													
Daily average	47,234	43,960	41,084	37,103	34,180	28,989	27,963	26,732	24,563	23,947	22,975	22,317	
Month	1,464,254	1,230,880	1,273,604	1,113,090	1,059,580	869,670	866,853	828,692	736,890	742,357	689,250	691,827	11,566,947
Sasakwa—													
Daily average	12,709	9,551	11,058	11,558	8,969	8,277	6,808	5,632	4,987	5,397	4,729	4,344	
Month	393,979	267,428	342,798	346,740	278,039	248,310	211,048	174,592	149,610	167,307	141,870	134,664	2,856,385
Beebe—													
Daily average	2,563	2,759	2,625	2,635	3,308	3,589	2,607	3,560	3,580	3,262	2,553	2,409	
Month	79,453	77,252	81,375	79,050	102,548	107,670	80,817	110,360	107,400	101,122	76,590	74,679	1,078,316
Henryetta, Deaner-Lyons, etc.—													
Daily average	6,257	6,081	6,903	7,067	6,871	6,803	6,202	6,794	6,699	6,161	5,914	5,806	
Month	193,967	170,288	213,993	212,010	213,001	204,090	192,262	210,614	200,970	190,991	177,420	179,986	2,359,572
Wewoka—													
Daily average	4,183	4,058	3,760	3,699	3,692	3,711	3,904	4,072	3,580	3,480	4,843	4,009	
Month	129,673	113,624	116,560	110,970	114,452	111,330	121,024	126,232	107,400	107,880	145,290	124,279	1,428,714
Cromwell—													
Daily average	7,277	7,425	7,866	7,624	7,512	7,514	7,381	7,348	7,111	7,013	6,316	5,275	
Month	225,587	207,900	243,846	228,720	232,872	225,420	228,811	227,788	213,330	217,403	189,480	163,525	2,584,682
Papoose-Gilcrease—													
Daily average	2,894	2,836	2,942	2,795	2,798	2,802	2,774	2,699	2,633	2,635	2,206	2,316	
Month	89,714	79,408	91,233	83,850	86,738	84,060	85,064	83,669	78,990	81,685	66,180	71,796	982,387
Jarvis-Holm—													
Daily average	321	321	315	306	310	313	284	274	255	246	256	249	
Month	9,951	8,988	9,765	9,180	9,610	9,390	8,804	8,494	7,650	7,626	7,680	7,719	104,857
Weleetka—													
Daily average	977	976	913	1,049	963	949	912	971	940	902	896	876	
Month	30,287	27,328	28,303	31,470	29,853	28,470	28,272	30,101	28,200	27,962	26,880	27,156	344,282
Wetumka—													
Daily average	39	39	39	39	38	38	61	42	....	....	61	56	
Month	1,209	1,092	1,209	1,170	1,178	1,140	1,891	1,302	..	.. 4	1,830	1,736	13,761
Yeager—													
Daily average	451	446	491	655	679	656	559	512	564	600	357	508	
Month	13,981	12,488	12,421	19,650	21,049	19,680	17,329	15,872	16,920	18,879	10,710	15,748	194,727
Miscellaneous—													
Daily average	811	846	725	1,169	572	698	601	736	644	2[illegible]	414	369	
Month	25,141	23,688	22,475	35,070	17,732	20,940	18,631	22,816	19,320	8,2[illegible]	12,420	11,439	237,892
CREEK AND TULSA COUNTIES:													
Glen Pool, Jenks, Kiefer—													
Daily average	6,446	6,648	6,609	6,596	6,605	6,611	6,399	6,593	6,336	6,387	6,417	6,366	
Month	199,826	186,144	204,879	197,880	204,755	198,330	198,369	204,383	190,080	197,997	192,510	197,346	2,372,899
Sapulpa and Fisher—													
Daily average	512	562	562	567	568	563	507	506	506	506	503	499	
Month	18,972	15,736	17,422	17,010	17,608	16,890	15,717	15,686	15,180	15,686	15,090	16,469	196,466
Cushing-Shamrock—													
Daily average	14,533	13,885	14,045	13,956	13,755	13,832	13,954	13,893	13,784	13,615	12,515	12,016	
Month	450,523	388,780	435,395	418,680	426,405	414,960	432,574	430,683	412,020	422,065	375,450	372,496	4,980,031
Bristow, Kellyville and Depew—													
Daily average	13,282	13,440	13,633	13,512	13,512	12,490	12,848	12,916	11,846	12,177	12,053	12,109	
Month	411,742	376,320	422,623	405,360	418,872	374,700	398,288	400,396	355,380	377,487	361,590	375,379	4,678,137
Pickett Prairie and North Bristow—													
Daily average	1,807	1,792	1,665	1,716	1,603	1,586	1,720	1,761	1,714	1,665	1,671	1,646	
Month	56,017	50,176	51,615	51,480	49,693	47,580	53,320	54,591	51,420	51,615	50,130	51,026	618,663
Eastern Bristow or Slick—													
Daily average	5,343	5,439	4,950	5,126	4,880	4,871	4,524	4,445	4,421	4,231	4,368	4,266	
Month	165,633	152,292	153,450	153,780	151 280	146,130	140,244	137,795	132,630	131,161	131,040	132,246	1,727,681
PAWNEE COUNTY:													
Cleveland—													
Daily average	2,703	2,721	2,824	3,210	2,971	3,008	2,867	2,683	2,664	2,483	2,193	2,206	
Month	83,793	76,188	87,544	96,300	92,101	90,240	88,877	83,173	79,920	76,973	65,790	68,386	949,286
Keystone—													
Daily average	1,583	1,543	1,585	1,519	1,902	1,614	1,851	1,985	2,099	2,128	1,710	1,803	
Month	49,073	43,204	49,135	45,570	58,962	48,420	57,381	61,535	62,970	65,968	51,300	55,893	649,011
Jennings—													
Daily average	3,177	3,021	2,124	2,117	2,136	2,152	2,040	2,264	2,004	1,968	1,742	1,723	
Month	98,487	84,588	65,844	63,510	66,216	64,560	63,240	70,184	60,120	61,008	52,260	53,412	683,170
Otoe—													
Daily average	510	524	515	562	562	558	545	542	474	515	351	339	
Month	15,810	14,672	16,058	16,860	17,422	16,740	16,895	16,802	14,220	15,965	10,530	10,509	182,483
Ralston-Masham—													
Daily average	182	227	219	219	239	226	109	109	175	127	102	101	
Month	5,642	6,356	6,789	6,570	7,409	6,780	3,379	3,379	3,750	3,937	3,060	3,131	60,183
PAYNE COUNTY:													
Yale, Quay, Ingalls—													
Daily average	3,825	3,836	3,907	3,874	3,930	3,862	3,827	3,793	3,712	3,410	3,774	3,537	
Month	118,575	107,408	121,117	116,220	121,830	115,860	118,637	117,583	111,360	105,710	113,220	109,647	1,...77,167
North Cushing—													
Daily average	2,513	3,831	3,357	2,600	3,766	3,392	3,050	2,705	2,595	2,238	1,674	1,662	
Month	77,903	107,268	104,067	78,000	116,746	101,760	94,550	83,855	77,850	69,378	50,220	51,522	1,013,119
South Cushing—													
Daily average	252	282	245	210	1,215	810	155	123	100	85	82	83	
Month	7,812	7,896	7,595	6,300	37,665	24,300	4,805	3,813	3,000	2,635	2,460	2,573	110,856
Mehan-Ripley—													
Daily average	1,197	2,116	2,796	2,677	2,167	2,212	1,485	1,696	1,659	1,424	1,405	1,376	
Month	37,107	59,248	86,676	80,310	67,177	66,360	46,035	52,576	49,770	44,144	42,150	42,656	674,209
OKLAHOMA COUNTY:													
Oklahoma City—													
Daily average	82,301	89,213	74,344	108,167	124,951	113,475	86,033	99,851	100,739	92,710	81,968	84,153	
Month	2,551,331	2,497,964	2,304,664	3,245,010	3,873,481	3,404,250	2,667,023	3,095,381	3,022,170	2,874,010	2,459,040	2,608,743	34,602,067
LINCOLN COUNTY:													
Stroud—													
Daily average	907	922	909	933	943	919	943	931	894	884	584	572	
Month	28,117	25,816	28,179	27,990	29,233	27,570	29,233	28,861	26,820	27,404	17,520	17,732	314,975
Davenport—													
Daily average	1,793	1,762	1,169	1,216	1,208	1,202	1,176	1,141	1,058	1,063	934	897	
Month	55,583	49,336	36,239	36,480	37,448	36,060	36,456	35,371	31,740	32,953	28,020	27,807	463,893
Kendrick—													
Daily average	192	197	190	202	207	209	194	192	198	198	143	151	
Month	5,952	5,516	5,890	6,060	6,417	6,270	6,014	5,952	5,940	6,138	4,290	4,681	68,270
Chandler—													
Daily average	....	....	....	5,723	4,798	4,876	4,160	3,905	1,638	1,260	1,305	1,292	
Month	...	.....	.....	171,690	148,738	146,280	128,960	121,055	49,140	39,060	39,150	40,052	884,125
KAY, GRANT AND NOBLE COUNTIES:													
Blackwell—													
Daily average	938	997	858	1,068	1,201	1,077	894	954	943	952	852	849	
Month	29,078	27,916	29,698	32,040	37,231	32,310	27,714	29,574	28,290	29,512	25,560	26,319	355,242
Vernon—													
Daily average	835	784	719	759	745	717	711	703	716	639	418	437	
Month	25,885	21,952	22,289	22,770	23,095	21,510	22,041	21,793	21,480	19,809	12,540	13,547	243,711

(Table Continued on Next Page)

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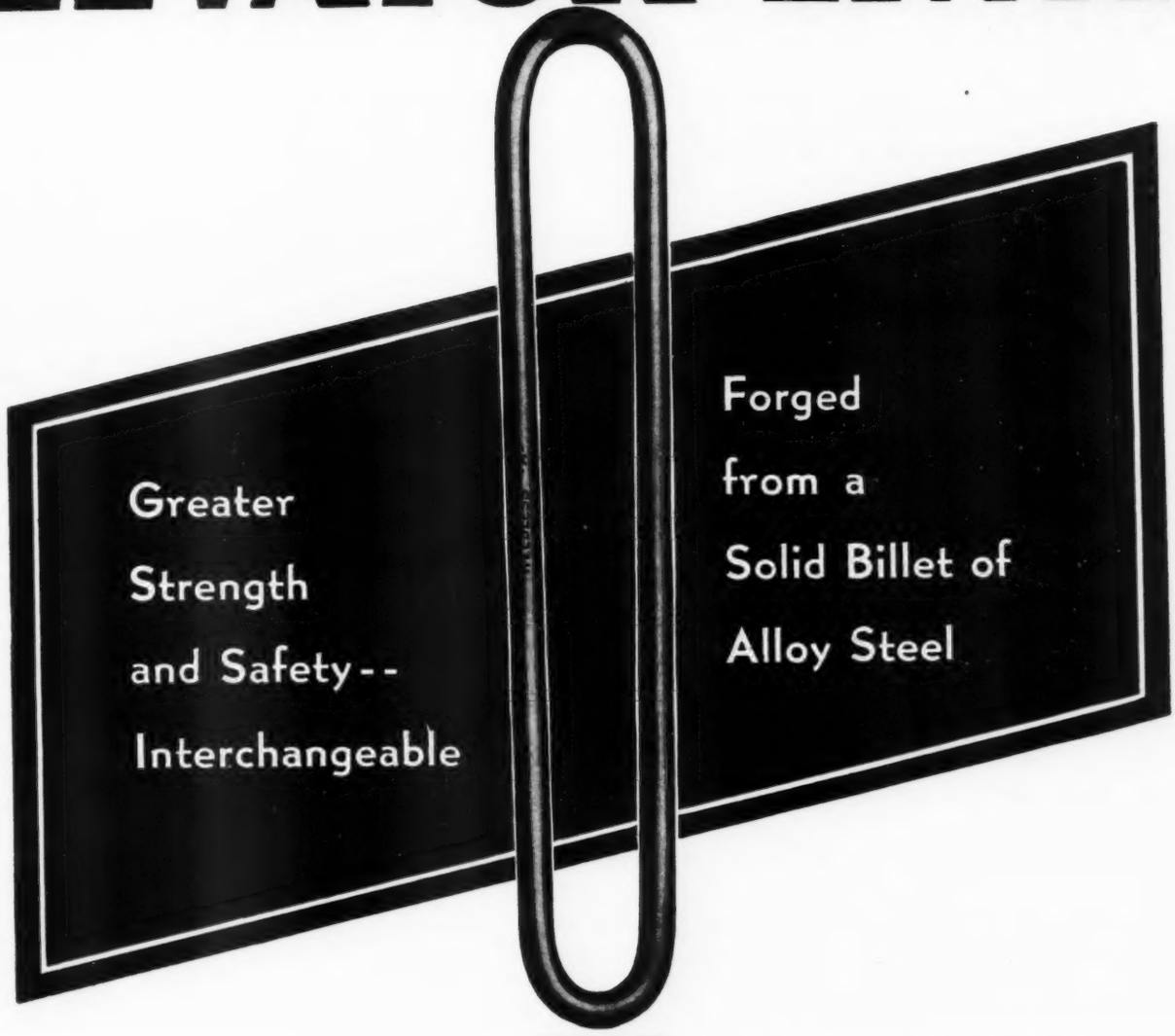

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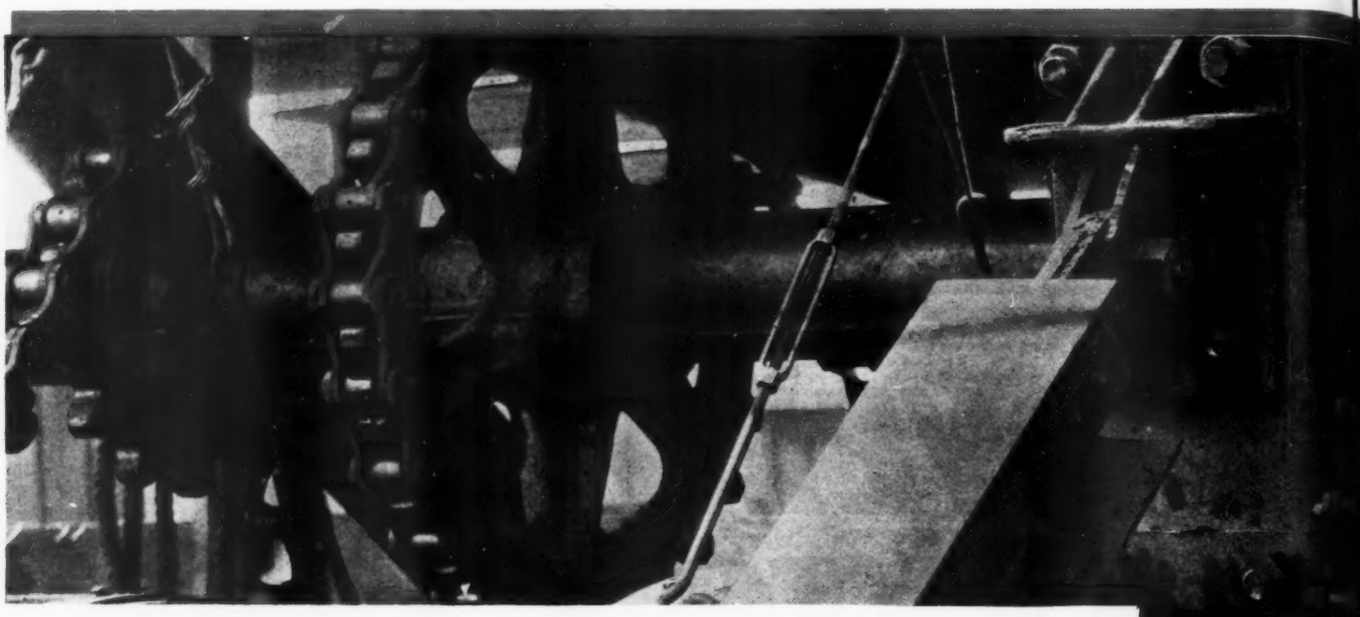

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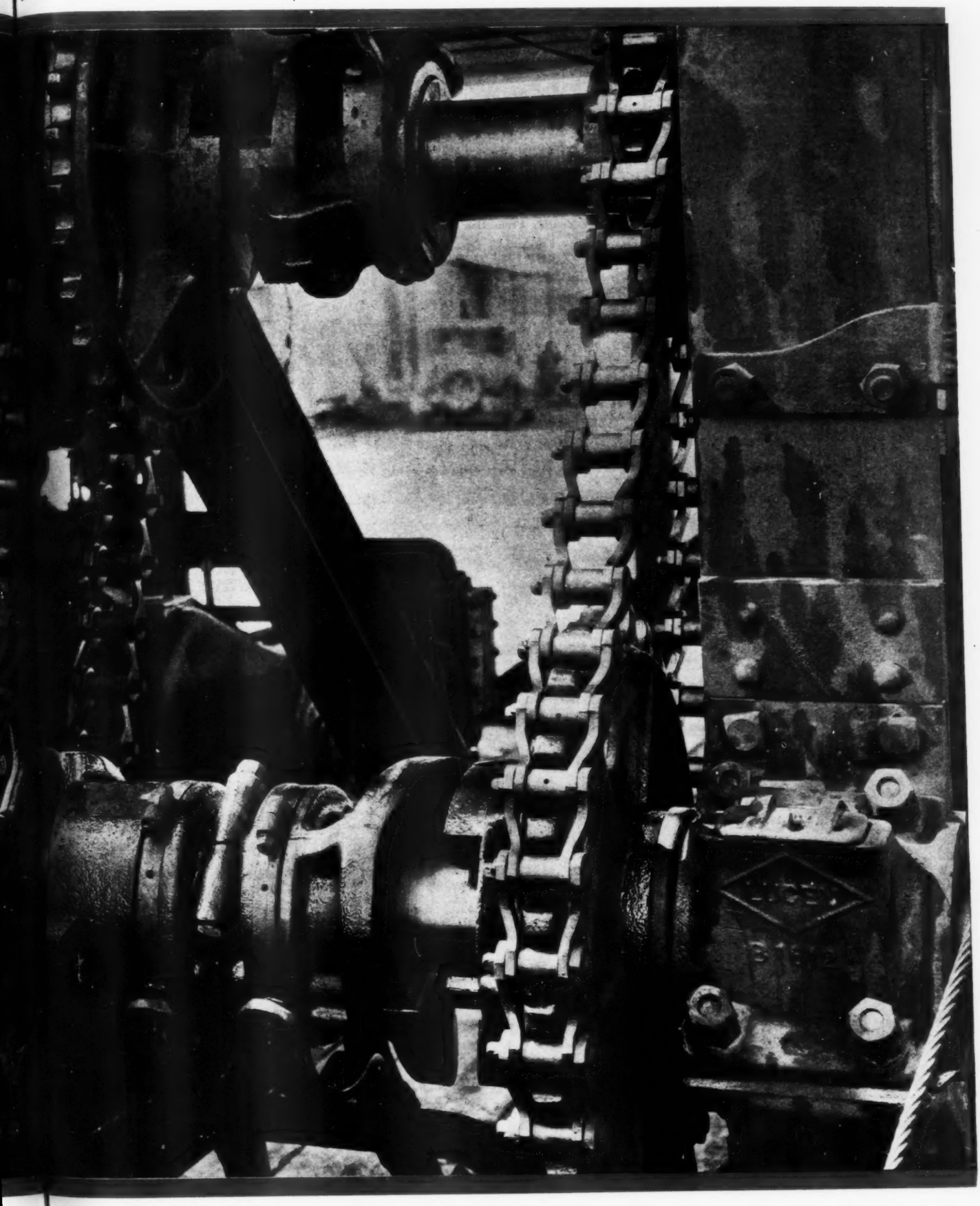

CHABELCO

making 2,000 to 2,500 bbls. of oil an hour and 200,000,000 feet of gas a day. The well was Indian Territory Illuminating Oil Co.'s No. 1 Mary Sudik, NE cor. SW, Section 31-11-2w, presenting one of the most difficult engineering problems oil operators ever had. The well was producing from the Wilcox sand at a total depth of 6,470 feet. When it blew in it made dry gas but soon drilled itself deeper and soon began spraying oil, some of which was carried by winds for several miles. Part of the oil was recovered by the hasty building of earthen reservoirs and ponds and damming the creek into which much of the oil found its way. Dwelling houses and field operations in the vicinity were abandoned and all nearby drilling operations were shut down. The well blew in while the crew were pulling the tools from the hole. The sand thrown up by the tremendous volume of gas cut the connections and made it impossible for the field men to shut the well in. After a desperate day and night battle covering 11 days the well was placed under control. The well was opened the first time September 17, making 12,264 bbls. in 12 hours, then shut in.

A serious fire occurred in March at the Sinclair Oil & Gas Co. and Amerada Petroleum Corp.'s No. 5 Kinter, SE cor. NE SE, Section 30-11-2w, in the Oklahoma City Field, with the well estimated to be making 125,000,000 feet of gas a day and spraying considerable oil. The well extended production a half mile east in the south end of the pool. The gas and oil were found in the Detrital sand at a total depth of 6,283 feet. It caught fire while being shut in. The crew had partly succeeded in shutting in the huge flow of gas when it ignited with a blast that shook the other building and rigs on the lease, and leaped 100 feet in the air, over the top of the derrick. After burning for two days it was blown out with a charge of high explosive. Two shots were necessary to snuff out the blaze. It caused considerable damage, the rig, complete rotary equipment and the boilers and house being ruined.

Another wild well was tamed in a few hours in August in the Oklahoma City Pool. Tom Slick Oil Co.'s No. 1 Alexander, in Section 2-11-3w, after breaking through the connections and blowing wild for 10 hours, was brought under

OKLAHOMA (Continued)

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
Otstot—													
Daily average	666	863	887	908	861	789	838	900	950	910	653	649	
Month	20,646	24,164	27,497	27,240	26,691	23,670	25,978	27,900	28,500	28,210	19,590	20,119	300,295
Deer Creek—													
Daily average	649	679	697	731	710	694	513	569	535	528	583	548	
Month	20,119	19,012	21,607	21,930	22,010	20,820	15,903	17,639	16,050	16,368	17,490	16,988	225,936
Ponca City—													
Daily average	592	586	660	568	561	563	610	575	565	580	518	522	
Month	18,352	16,408	20,460	17,040	17,291	16,890	18,910	17,825	16,950	17,980	15,540	16,182	209,828
Mervine—													
Daily average	212	282	259	252	264	259	265	234	264	262	179	177	
Month	6,572	7,896	8,029	7,560	8,184	7,770	8,215	7,254	7,920	8,122	5,370	5,487	88,379
Braman—													
Daily average	3,665	3,507	3,471	3,496	3,369	3,291	3,117	3,262	3,044	2,829	1,819	1,822	
Month	113,615	98,196	107,601	104,880	104,439	98,730	96,627	101,122	91,320	87,699	54,570	56,482	1,115,251
Hubbard—													
Daily average	1,605	1,583	1,619	1,598	1,548	1,493	1,465	1,425	1,310	1,271	737	733	
Month	49,755	44,324	50,189	47,940	47,988	44,790	45,415	44,175	39,300	39,401	22,110	22,723	498,110
Thomas—													
Daily average	430	646	687	727	676	671	738	659	744	638	372	405	
Month	13,330	18,088	21,297	21,810	20,956	20,130	22,878	20,429	22,320	19,778	11,160	12,555	224,721
Garrett—													
Daily average	55	11	23	23	12	14	14	13	6	15	18	17	
Month	1,705	308	713	690	372	420	434	403	180	465	540	527	6,757
Tonkawa—													
Daily average	8,334	7,526	7,652	7,623	7,351	7,310	6,454	6,322	6,215	6,063	4,903	4,270	
Month	258,354	210,728	237,212	228,690	227,881	219,300	200,074	195,982	186,450	187,953	147,090	132,370	2,432,094
Billings—													
Daily average	130	130	129	126	117	116	126	130	141	189	189	169	
Month	4,030	3,640	3,999	3,780	3,627	3,480	3,906	4,030	4,230	5,859	5,670	5,239	51,490
Miscellaneous—													
Daily average	1,513	1,641	1,585	2,431	1,502	1,810	1,394	1,683	1,235	1,847	1,220	1,190	
Month	46,903	45,948	49,135	72,930	46,562	54,300	43,214	52,173	37,050	57,257	36,600	36,890	578,962
GARFIELD COUNTY:													
Garber—													
Daily average	4,351	4,622	4,762	4,593	4,349	4,304	4,651	4,606	4,748	4,505	4,189	4,215	
Month	134,881	129,416	147,622	137,790	134,819	129,120	144,181	142,786	142,440	139,655	125,670	130,665	1,639,045
LOGAN COUNTY:													
Lovell—													
Daily average	638	679	615	624	320	311	567	517	564	971	626	611	
Month	19,778	19,012	19,065	18,720	9,920	9,330	17,577	16,027	16,920	30,101	18,780	18,941	214,171
Marshall—													
Daily average	10,304	9,140	7,621	6,496	5,306	5,460	4,370	4,012	4,008	3,456	2,636	2,612	
Month	319,424	255,920	236,251	194,880	164,486	163,800	135,470	124,372	120,240	107,136	79,080	80,972	1,982,031
CARTER COUNTY:													
Healdton—													
Daily average	11,937	12,077	11,973	11,926	12,183	11,910	11,982	12,062	12,065	11,815	9,265	9,193	
Month	370,047	338,156	371,163	357,780	377,673	357,300	371,442	373,922	361,950	366,265	277,950	284,983	4,208,631
Hewitt—													
Daily average	7,430	7,269	7,199	7,126	7,356	7,316	7,273	6,952	7,024	6,948	5,189	5,172	
Month	230,330	203,532	223,169	213,780	228,036	219,480	225,463	215,512	210,720	215,388	155,670	160,332	2,501,412
Graham—													
Daily average	3,760	2,712	2,580	2,712	2,601	2,560	2,486	2,494	2,444	2,396	1,844	1,806	
Month	85,560	75,936	79,980	81,360	80,631	76,800	77,066	77,314	73,320	74,276	55,320	55,986	893,549
Brock—													
Daily average	589	567	561	555	542	539	515	499	902	17	18	18	
Month	18,259	15,876	17,391	16,650	16,802	16,170	15,965	15,469	27,060	527	540	558	161,267
Fox—													
Daily average	2,224	2,214	2,226	2,138	2,115	2,088	2,036	2,048	2,067	2,055	1,426	1,428	
Month	68,944	61,992	69,006	64,140	65,565	62,640	63,116	63,488	62,010	63,705	42,780	44,268	721,634
Sholom Alechem—													
Daily average	13,783	13,603	13,902	13,446	13,126	13,247	14,192	13,502	14,102	14,483	11,119	11,003	
Month	427,273	380,884	430,962	403,380	406,906	397,410	439,952	418,562	423,060	448,973	333,570	341,093	4,852,625
STEPHENS AND COTTON COUNTIES:													
Loco-Milroy—													
Daily average	1,356	1,607	1,599	1,518	1,531	1,502	1,490	1,480	1,445	1,414	1,371	1,381	
Month	42,036	44,996	49,569	45,540	47,461	45,060	46,190	45,880	43,350	43,834	41,130	42,811	587,857
Comanche—													
Daily average	1,118	1,176	1,512	1,153	1,237	1,242	1,895	1,762	1,760	1,530	1,663	1,611	
Month	34,658	32,928	46,872	34,590	38 347	37,260	58,745	54,622	52,800	47,430	49,890	49,941	538,893
Duncan—													
Daily average	4,680	4,411	4,285	4,351	4,413	4,390	4,368	4,325	4,121	4,291	4,165	4,095	
Month	145,080	123,508	132,835	130,530	136,803	131,700	135,408	134,075	123,630	133,021	124,950	126,945	1,578,485
Walters—													
Daily average	2,726	2,536	2,186	2,366	3,088	2,988	4,233	4,091	3,646	2,936	3,198	3,013	
Month	84,506	71,008	67,766	69,180	95,728	89,640	131,223	126,821	109,380	91,016	95,940	93,403	1,125,611
Kilgore—													
Daily average	375	354	343	339	324	318	280	327	322	322	292	289	
Month	11,625	9,912	10,633	10,170	10,044	9,540	8,680	10,137	9,660	9,982	8,760	8,959	118,102
JEFFERSON COUNTY:													
Hambro, etc.—													
Daily average	2,028	2,218	2,417	2,581	2,969	2,806	2,625	2,686	2,602	2,418	1,631	1,610	
Month	62,868	62,104	74,927	77,430	92,029	84,180	81,375	83,266	78,060	74,958	48,930	49,910	870,047
6s-6w—													
Daily average	183	183	173	158	158	161	151	136	134	114	113	116	
Month	5,673	5,124	5,363	4,740	4,898	4,830	4,681	4,216	4,020	3,534	3,390	3,410	53,879
CADDO COUNTY:													
Cement—													
Daily average	2,113	2,102	3,008	2,734	3,150	4,785	3,921	3,965	3,932	3,685	4,914	4,610	
Month	65,503	58,856	93,248	82,020	97,030	143,550	121,551	122,915	117,960	114,235	147,420	142,910	1,307,199
GARVIN COUNTY:													
Robberson—													
Daily average	1,910	2,063	2,349	1,853	1,863	1,849	1,772	1,799	1,798	1,788	1,414	1,421	
Month	59,210	57,764	72,819	55,590	57,753	55,470	54,932	55,769	53,940	55,428	42,420	44,051	665,146
GRADY COUNTY:													
Knox—													
Daily average	3,268	3,175	2,991	2,993	2,956	2,942	2,903	2,869	2,832	2,777	2,866	2,778	
Month	101,308	88,900	92,721	89,790	91,636	88,260	89,993	88,939	84,960	86,087	85,980	86,118	1,074,692
BECKHAM COUNTY:													
Sayre—													
Daily average	35	31	24	103	89	91	64	36	41	39	33	40	
Month	1,085	868	744	3,090	2,759	2,730	1,984	1,116	1,230	1,209	990	1,240	19,045
MARSHALL COUNTY:													
Madill—													
Daily average	531	652	820	1,029	1,033	1,107	1,196	919	763	616	538	533	
Month	16,461	18,256	25,420	30,870	33,573	33,210	37,076	28,489	22,890	19,096	16,140	16,523	291,004
Daily average	671,064	642,058	616,626	651,377	664,113	658,490	581,694	553,614	550,304	536,532	498,059	485,713	592,695
Total 1930	20,802,984	17,977,624	19,115,406	19,541,310	20,587,503	19,754,700	18,032,514	17,162,034	16,509,120	16,632,523	14,941,770	15,057,103	216,114,591
Total 1929	22,575,874	20,464,164	20,838,262	20,235,390	21,345,453	20,561,112	22,371,925	22,429,522	21,299,490	20,821,646	19,193,760	20,092,876	252,229,474
Total 1928	20,978,320	19,294,426	20,162,524	19,096,920	19,443,355	18,482,981	18,809,188	20,840,804	22,456,860	23,431,071	22,078,680	22,425,722	247,500,851
Total 1927	19,035,426	19,752,348	22,480,921	22,208,130	23,258,463	22,830,330	26,522,546	26,283,350	24,111,660	24,247,053	23,083,380	22,208,417	276,022,624
Total 1926	13,674,813	12,392,016	14,312,886	14,468,190	14,567,008	14,073,510	14,657,482	14,618,236	14,466,510	15,720,689	16,876,950	17,882,908	177,651,198

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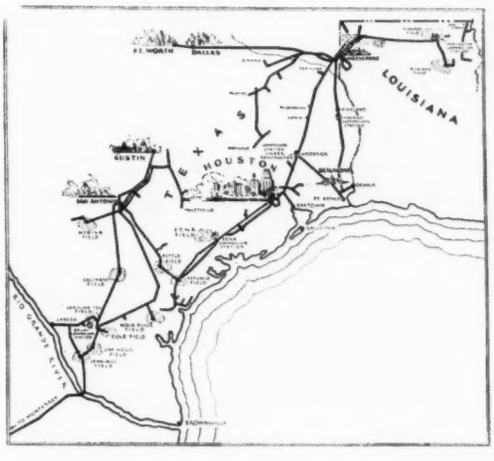

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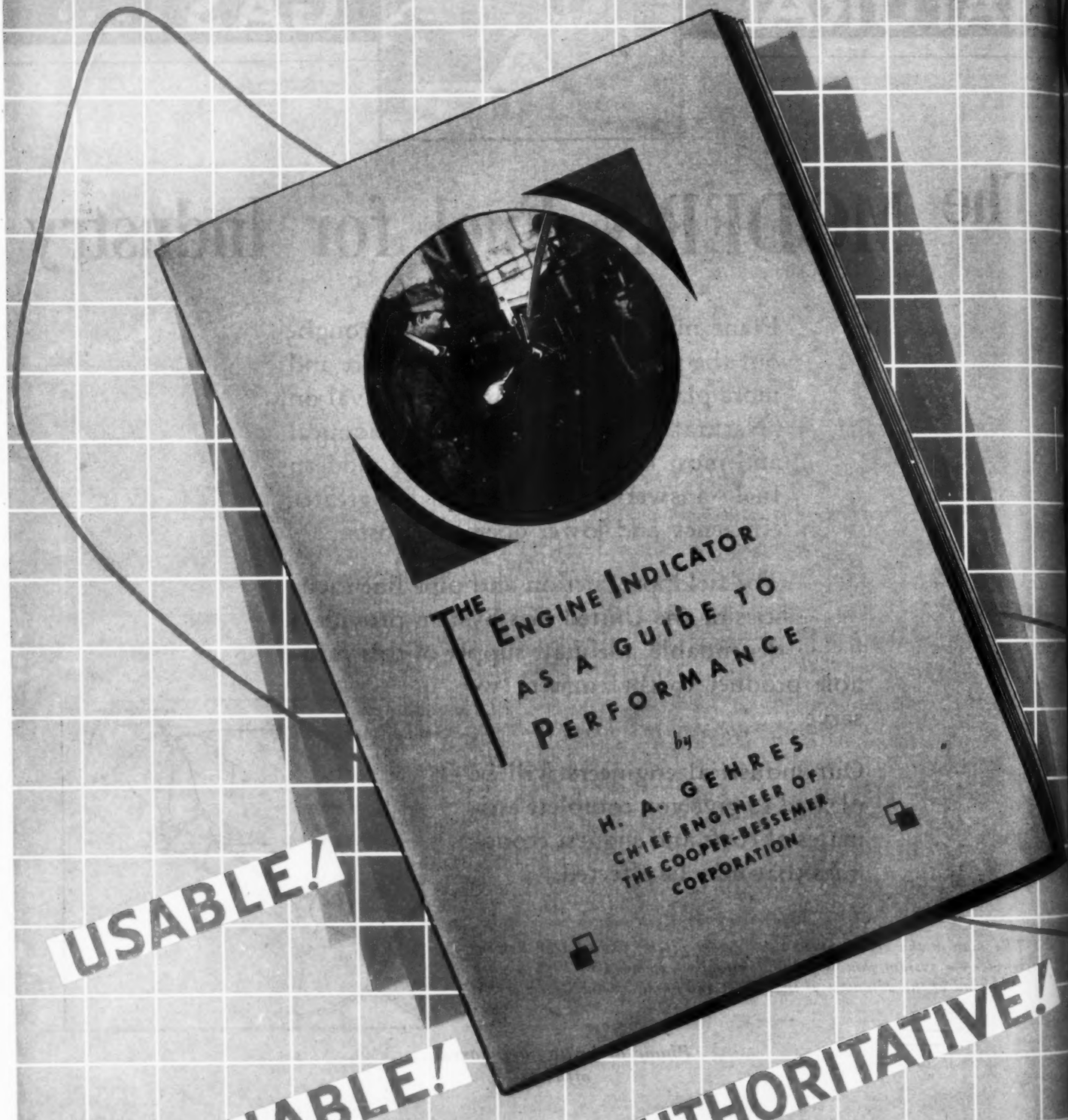

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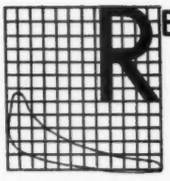

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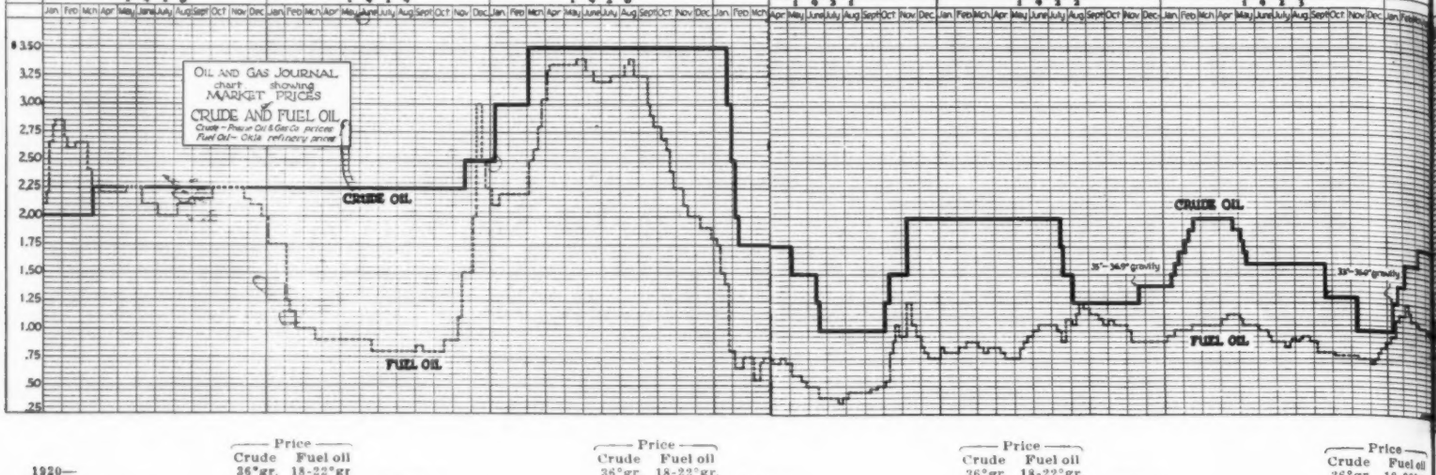


	Price Crude 36°gr.	Price Fuel oil 18-22°gr.
1920—		
January 2	....	2.10
January 6	3.00	....
January 16	....	2.20
March 1	3.50	....
March 3	....	2.50
March 12	....	2.60
March 18	....	2.80
March 26	....	3.05
April 3	....	3.30
April 6	....	3.35
May 25	....	3.40
June 7	....	3.30
June 20	....	3.20
July 14	....	3.25
August 14	....	3.40
August 27	....	3.25
September 13	....	3.00
September 16	....	2.90
September 27	....	2.80
October 8	....	2.70
October 15	....	2.60
October 18	....	2.40
October 28	....	2.25
November 12	....	2.10
November 18	....	2.00
December 10	....	1.90
December 29	....	1.80
1921—		
January 6	....	1.75
January 12	....	1.50
January 20	....	1.40
January 24	3.00	....
January 28	....	.80
January 31	2.50	....
February 4	2.00	.65
February 9	1.75	....
February 19	....	.75
March 4	....	.55
March 14	....	.70
March 21	....	.75
April 3	....	.70
April 16	....	.75
April 20	....	.70
May 2	1.50	....
May 3	....	.60
May 21	....	.55
May 28	....	.50
June 13	1.25	....
June 16	1.00	.40
June 20	....	.35
July 26	....	.40
August 6	....	.45
September 10	....	.47½
September 21	....	.50
October 1	1.25	....
October 6	....	.55
October 7	1.50	....
October 10	....	.80
October 15	....	.90
October 19	....	1.05
October 24	....	.95
November 7	2.00	....
November 8	....	1.25
November 16	....	1.05
November 20	....	.95
December 1	....	.85
December 5	....	.80
December 12	....	.75
1922—		
January 1	....	.85
January 5	....	.80
February 1	....	.85
February 14	....	.90
March 2	....	.85
March 10	....	.80
March 16	....	.85
April 9	....	.80
April 15	....	.70
May 9	....	.85
May 15	....	.90
May 20	....	.95
June 1	....	1.00
June 9	....	1.05
July 8	....	1.00
July 15	1.75	.90
July 18	....	1.50
July 22	....	1.10
August 2	1.25	1.05
August 7	....	1.15
August 14	....	1.25
August 25	....	1.20
September 1	....	1.15
September 15	....	1.10
September 24	....	1.05
October 1	....	1.10
October 10	....	1.05
November 1	....	1.00
November 8	....	.90
November 22 (35-36.9°)	1.40	....
1923—		
January 5	....	.95
January 13	1.50	....
January 17	1.60	1.00
January 27	1.70	....
February 2	1.80	....
February 10	1.90	....
February 15	....	1.05
February 17	2.00	....
April 8	....	1.10
April 14	....	1.15
April 23	1.80	....
May 2	1.80	....
May 5	1.70	1.05
May 12	1.60	....
June 2	....	1.00
June 19	....	.90
July 15	....	.85
July 21	....	.90
July 26	....	.92½
August 1	....	.90
August 6	....	.92½
August 12	....	.95
August 27	....	.90
September 9	....	.80
September 19 (33-39.9°)	1.30	....
October 5	....	.77½
November 8	1.00	....
November 10	....	.75
December 1	....	.70
December 7	....	.75
December 14	....	.80
December 21	....	.85
December 29	....	.90
1924—		
January 8	....	.95
January 9 (33-35.9°)	1.25	....
January 15	....	1.10
January 19	1.40	....
January 22	....	1.15
February 2	1.60	....
February 5	....	1.25
February 12	....	1.17½
February 19	....	1.10
March 4	....	1.07½
March 8	1.75	....
March 11	....	1.05
April 1	....	1.02½
April 15	....	1.00
April 22	....	.96
April 29	....	.87½
May 6	....	.81
May 20	....	.83½
May 27	....	.77½
June 3	....	.71
June 10	....	.73½
June 17	....	.71

control when a new set of master gates were installed. The well was estimated at 15,000 bbls. of oil a day and 50,000,000 feet of gas. Some of the oil was saved by pumping it into the stock tanks.

In November, Morgan Petroleum Co.'s No. 1 Stout, NW cor. SE, NW, Section 2-11-3w, blew wild for 3 days. It was located near the southern limits of the capital city creating a dangerous fire hazard. It was estimated to be making 25,000 bbls. of oil a day and 50,000,000 feet of gas. Residents moved out of the fire zone, when a grass fire was started which was soon extinguished. The gas sprayed the oil for a considerable distance before the gusher was brought under control. All nearby drilling operations were shut down and all fires in the vicinity were ordered out by the fire marshal, while the well was blowing wild.

Application of Proration

The method of producing the wells in the Oklahoma City Field was changed several times during the year. In February the production increased so much operators found it necessary to curtail to 12½ per cent of the rated potential. The proration plan was changed in April when the production was increased to 16⅔ per cent of the rated potential, allowing the eight classes of wells to produce 48 hours out of each 12-day period. The plan was changed again in July to allow the pipe line companies to run the oil from the field storage. The new schedule allowed the operators to produce the wells one day out of each 12-day period. In December the corporation commission issued an order requiring approximately 25 completed wells in the Oklahoma City Field that had been stopcocking to flow wide open four consecutive hours each 12-day period to determine the potential standard upon which to base proration. The order reduced the potential of the field approximately 50,000 bbls. a day.

Rock Pressure Reduced

The first part of July the rock pressure in the Oklahoma City Field was found to be declining, indicating the peak of the potential production had passed. The original rock pressure of the wells dropped from 2,200 pounds to around 1,000 pounds according to a survey made at the time.

The largest completed well in the field to date is located on the townsite of Oklahoma City, and is the British-American Oil Co.'s No. 1 in the SE cor. NW, Section 10-11-3w, which was rated by the pool umpire to be good for 92,000 bbls. in 24 hours. The initial production of the wells in the pool was smaller during the last half of the year. The wells producing from the Silicious lime had all declined and practically all of them were making water in July, and the water encroachment was increasing daily. New wells completed in the Silicious lime were showing from 5 to 50 per cent water on the initial gauge.

Producing Limits Defined

The producing area of the field was defined on the east by a fault, on the southwest by a water well, while the south end was condemned by several water wells. The limits on the west and north, where the Simpson and Wilcox sands were being found, is still a matter of guesswork. The Sinclair Oil & Gas Co.'s No. 4 School Land, 67 NE cor. SE SE, Section 36-11-3w, found water in the pay sand at 6,781-91 feet, proving the southwest limits of the field. The production was extended into Cleveland County in July by the Continental Oil Co.'s No. 3 Sudik, NW cor. NE NE, Section 6-10-2w, making 650 bbls. the first hour and 8,810 bbls. in 8½ hours when it was shut in. The gas was estimated at 25,000,000 feet a day. Other tests in Cleveland County were abandoned when they were found to be running low on the structure.

Banner Lease of Field

The largest recovery from any one lease in the field up to the close of the year was from the Wirt Franklin Petroleum Corp.'s Lowery in Section 12-11-3w, in the north end of the field, with 10 completed wells showing a total recovery of 2,960,700 bbls.

Important Sales

Two large purchases of production and acreage were made in the Oklahoma City Field during the year. Kessler Petroleum Co. purchased the half interest of F. C. Hall in the Hall & Briscoe properties in the Oklahoma City Field for a consideration of $2,000,000, part cash and part oil. Powell Briscoe, the other half owner, did not sell. The transaction did not include the interests held by Hall & Briscoe outside of the Oklahoma City Field. J. M. Kessler, president of the Kessler Petroleum Co., announced there would be no change in the operation of the properties. Included in the transaction was approximately 48 acres in Section 10-11-3w, all of which was proven with several producing wells, and two wells in Section 2-11-3w, and other scattered acreage inside the city limits.

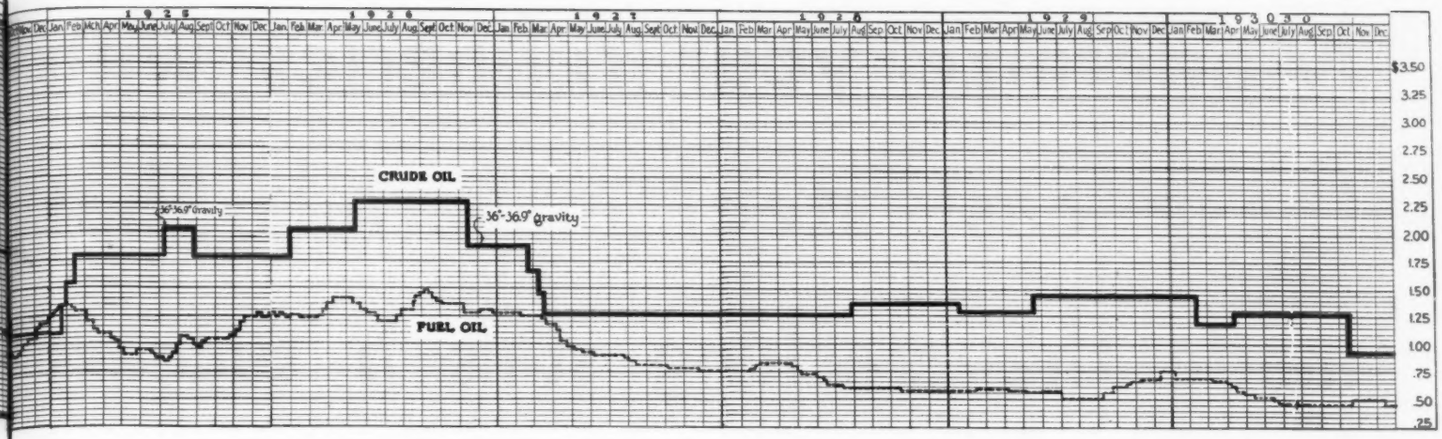
Sunray Oil Co. purchased the holdings of Gant & Garvin in the Oklahoma City Field for a total consideration of $1,250,000, part cash and the balance in oil. The transaction includes two producing wells and three drilling wells and the acreage surrounding the operations. The producing wells were No. 1 Olafson, NE cor. NW SW Section 2-11-3w, completed for 3,842 bbls. in eight hours; No. 1 Hanson, SW cor. NE NW Section 2-11-3w, completed for 2,210 bbls. in 19½ hours. The drilling tests were No. 1 Twyford-Smith, SW cor. NW SW NW Section 10-11-3w; No. 1 Mead, SE cor. Section 34-12-3w, and No. 1 Donavan, SW cor. SE Section 34-12-3w.

Mid-Kansas Oil & Gas Co. acquired through purchase a half interest in the Ramsey Petroleum Co. 352 acres in the Wewoka Townsite Pool in Seminole County. The transaction was believed to have been without cash, but the Mid-Kansas Oil & Gas Co. agreed to drill one well on the acreage to the Wilcox sand for a half interest in all the acreage without cost to the Ramsey Petroleum Co. The acreage was located in Section 19-8-8, 18-8-8 and 30-8-8, where some large producing wells have been completed. On the property were three wells producing from the shallow sand, making around 10 bbls. a day.

Carter Oil Co. purchased 60 acres in Section 33-9-6, west of production in the Seminole Pool, from the First National Petroleum Corp., formerly Gwinn Drilling Co., for the reported consideration of $250 an acre. On the acreage was a test shut down at 37 feet, which resumed drilling at once. The acreage was located in the NE SW and N half SE SW Section 33-9-6 and test was located in the NE cor. SE SW Section 33-9-6.

Wildcat Discoveries

Wildcat wells found oil, and new producing areas were opened, in 1930 with alarming regularity. In May a new pool was found west of Chandler in Lincoln County, with an initial production of 5,000 bbls. a day. A wildcat well was completed in western Payne County by Reiter-Foster Oil Corp. and others, Continental Oil Co. and Barnsdall Oil Corp. completed a wildcat in Garfield County,



	Price Crude 36°gr.	Price Fuel oil 18-22°gr.
June 24	....	.80
July 1	....	.77½
July 17 (33° and above)	1.75	....
July 22	....	.75
July 28	1.50	....
August 5	....	.72½
August 12	....	.75
August 19	....	.80
August 26	....	.86
September 2	....	.90
September 16	....	.95
September 17	1.25	....
September 27 (33-35-9°)	1.10	....
September 30	....	.92½
October 7	....	.90
October 21	....	.92½
October 28	....	.95
November 4	....	1.00
November 18	....	1.05
December 2	....	1.15
December 9	....	1.17½
December 30	....	1.25
1925—		
January 6	....	1.27½
January 13	....	1.30
January 20	....	1.32½
January 22	1.35	....
January 27	....	1.35
January 30	1.55	....
February 10	....	1.32½
February 12	1.80	....
February 17	....	1.30
March 3	....	1.20
March 17	....	1.12½
March 24	....	1.10
April 14	....	1.05
April 21	....	1.02½
April 28	....	.95
June 16	....	.92½
June 23	....	.90
June 30	....	.87½
July 7	....	.85
July 10 (30-36.9°)	2.04	....
July 14	....	.87½
July 21	....	.92½
July 28	....	1.00
August 4	....	1.07½
August 18	....	1.05
August 25	....	1.00
August 27	1.79	....
September 1	....	.97½
September 8	....	1.02½
September 15	....	1.05
October 27	....	1.07½
November 3	....	1.12½
November 10	....	1.20
November 17	....	1.25
December 8	....	1.27½
December 15	....	1.25
December 29	....	1.27½
1926—		
January 5	....	1.25
January 12	....	1.27½
January 19	....	1.25
January 26	....	1.2
February 1	2.04	....
February 2	....	1.25
February 15	....	1.22½
March 16	....	1.25
March 23	....	1.30
March 30	....	1.35
April 13	....	1.40
May 11	....	1.35
May 15	2.29	....
May 25	....	1.30
June 1	....	1.27½
June 15	....	1.25
June 22	....	1.20
July 20	....	1.25
July 27	....	1.30
August 17	....	1.37½
August 24	....	1.42½
August 31	....	1.45
September 7	....	1.47½
September 14	....	1.45
September 21	....	1.40
September 28	....	1.37½
October 5	....	1.35
November 9	....	1.27½
November 17	1.90	....
December 7	....	1.30
December 28	....	1.27½
1927—		
January 1	....	1.27½
February 8	....	1.25
February 22	1.67	1.25
March 5	1.47	....
March 8	....	1.25
March 12	1.28	....
March 15	....	1.22½
March 22	....	1.17½
April 5	....	1.12½
April 12	....	1.02½
April 19	....	.97½
May 3	....	.95
May 17	....	.92½
June 7	....	.90
July 26	....	.87½
August 2	....	.85
August 16	....	.80
October 4	....	.77½
November 22	....	.75
1928—		
February 14	....	.77½
February 21	....	.80
February 28	....	.82½
April 24	....	.80
May 1	....	.75
May 8	....	.72½
May 29	....	.70
June 12	....	.67½
June 19	....	.62½
July 17	....	.60
July 27	1.36	.60
October 16	....	.55
1929—		
January 25	1.20	.55
February 26	....	.60
March 5	....	.57½
April 16	....	.55
May 14	....	.52½
May 20	1.45	.52½
June 4	....	.55
July 9	....	.50
September 10	....	.55
September 24	....	.60
October 15	....	.62½
October 22	....	.65
November 12	....	.67½
December 10	....	.75
1930—		
January 1	1.45	.75
February 15	1.20	....
March 11	....	.70
April 1	....	.65
April 10	1.29	....
April 15	....	.60
April 29	....	.57½
May 13	....	.55
June 10	....	.52½
June 24	....	.50
July 15	....	.47½
October 25	.95	....
October 28	....	.52½
November 11	....	.50
December 16	....	.47½

Payne Drilling Co. and Bullock found a new well in southern Pottawatomie County, and towards the last part of the year Deep Rock Oil & Refining Co. opened a new Wilcox sand area near Wewoka in Seminole County. In the southern part of the Cement Pool, in Caddo County, deeper sands were found which increased the possibilities in the area. The Tatums Pool in Carter County was soon an important area, and the extension to the Comanche Field in Stephens County was yielding large wells from the shallow pay horizons.

Opening Wanette Pool

A new producing area was found west of the Asher Pool, in southern Pottawatomie County, in February, and was named the Wanette Pool. It yielded oil of 46 gravity, the highest yet found in the Greater Seminole area. The discovery well was Payne Drilling Co. and others' No. 1 Bullock, SE cor. NE Section 22-6-2. The operators found water in the Simpson at 4,095-4,141 feet and plugged back to the sand at 3,502-12 feet, where the casing was split and the well completed for 720 bbls. on the first 24 hours' gauge. The producing sand was not positively identified and has been called the Wanette sand for want of a better name. The pool was considered an important extension to the Greater Seminole area and has been curtailed to 25 per cent of its potential during its life. New extensions were found near the last part of the year on the south, indicating additional development.

The Wanette Pool was considered the most promising in the Greater Seminole area in the middle of the year. Pipe line companies extended their systems into the area; Consolidated Pipe Line Co. entered the area with an extension line. New wells were completed in the area averaging 3,000 bbls. a day.

Konawa Defined

The Konawa Pool, which was found the previous year, was further developed during 1930. Shortly after it was opened the area was defined to the north by several dry holes in Section 8-6-6, and in April nine other failures were reported surrounding large producers. Shell Petroleum Corp.'s No. 1 Caesar, NW cor. SE SE Section 20-6-6, Seminole County, was the largest producer found in the pool. The well made 5,027 bbls. in 24 hours pinched from sand at 2,930-38 feet.

South Earlsboro

The South Earlsboro Pool was discovered in February by Amerada Petroleum Corp. and Dixie Oil Co.'s No. 1 Grounds, SE cor. NE NE Section 22-9-5, Pottawatomie County, making 7,365 bbls. the first 24 hours. The development in the area was rapid and it was apparent in April that the productive part of the pool would not cover a large area, and operators were not favorably impressed with the result of the wells that were being completed. The first location south of the discovery well. Magnolia Petroleum Co.'s No. 1 Grounds, NE cor. NW Section 23-9-6, swabbed 1,050 bbls. in 20 hours from the Wilcox sand at a total depth of 4,227 feet. The north offset was drilled by the Gypsy Oil Co. in the SW cor. SE Section 14-9-5. It swabbed 95 bbls. of oil and 1½ bbls. of water an hour. The Amerada Petroleum Corp. and Dixie Oil Co.'s No. 2 Ground, NW cor. Section 23-9-5, was believed to be the second largest well ever completed in the Seminole area. It was the largest completed outside of the St. Louis Pool. It made 11,450 bbls. from the Wilcox sand at 4,210-24 feet in 24 hours. After a shot of 20 quarts it increased its production to 14,800 bbls. in 24 hours. The first failure in the pool was Prairie Oil & Gas Co.'s No. 2 Grounds, NE cor. NW NE Section 23-9-5, finding a hole full of water in the Wilcox sand at a total depth of 4,239 feet.

Wewoka's Important Extension

The development of the area south of Wewoka in Seminole County was begun several years ago and several wells were completed in the shallow pay horizons. About 6 miles south of the town along the Hughes-Seminole county line several large gas wells were completed in September. The area soon was humming with activity and gas wells were being completed for 30,000,000 feet a day, from sand at 2,800-2,900 feet.

In the old area about a mile south of Wewoka, where the old producing wells were declining to small producers in the shallow sand, Deep Rock Oil & Refining Co. drilled No. 1 Whitworth, NW cor. SW NE Section 30-8-8, to the Wilcox sand at 3,922 feet, where it flowed 2,517 bbls. in 24 hours. The completion of this well resulted in others and at the close of the year it was the most active area in the Greater Seminole district.

One of the largest wells, and possibly the largest, in the Greater Seminole area was completed by the Mid-Kansas Oil & Gas Co. in its No. 2 Davis, NE cor. SE NW Section 30-8-8. It flowed 16,462 bbls. the first 24 hours from the Wilcox sand.

Carr City Broadens

Carr City Pool was extended to the north by the Gypsy Oil Co.'s No. 3 Coker, SE cor. NW SW Section 3-8-5, Seminole County, making 1,720 bbls. the first 20 hours from the Wilcox sand at 4,192-4,203 feet. The well extended the production in the area a mile to the north and other tests were started and finished with the production reaching over into Section 2-8-5.

In the old Seminole Pool, some of the old producers were drilled deeper to the second Wilcox sand horizon and after a shot increased their production. Pure Oil Co.'s No. 5 Strothers, NW cor. NE SW Section 26-9-6, one of the first wells completed in the Seminole Pool, was drilled deeper from 4,198 feet to 4,212 feet, where it was shot and made 480 bbls. a day on the pump. Several others were drilled deeper and increased their production.

Searight Pool was inactive until May when production was extended by a well being completed in the shallow sand. The Papoose Oil Co.'s No. 2 Marks, NW cor. SE NW Section 32-10-6, Seminole County, flowed 515 bbls. the first 12 hours from the Cromwell sand at 3,868-74 feet. The area was immediately developed and the new operations resulted in the second well being completed by the Twin State Oil Co. It was No. 1 Marks, SW cor. NE NW Section 32-10-6, making 625 bbls. in 24 hours from the Cromwell sand at 3,830-31 feet. It was later drilled deeper and made 3,205 bbls. in 24 hours from a total depth of 3,834 feet.

Deepest Well in Seminole

The deepest test ever drilled in the Greater Seminole area resulted in a dry hole and was abandoned. It was completed in the Mission Pool. It was drilled primarily to furnish geological data. The test was Gypsy Oil Co.'s No. 9 Barkus, NW cor. SW SW Section 6-8-6, Seminole County. The Silicious lime was found at 5,840 feet, where the 4¾-inch casing was landed and was later drilled and abandoned at a total depth of 6,204 feet, with a hole full of water.

An interesting wildcat was drilled near Sacred Heart in southern Pottawatomie County, which found a showing of oil in

(Continued on Page 144)

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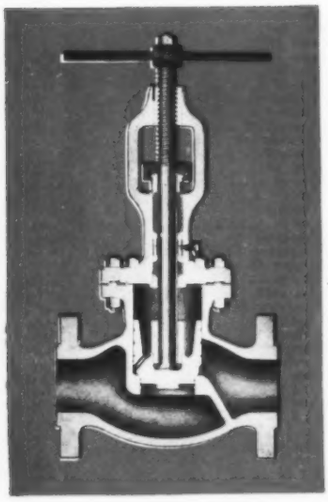
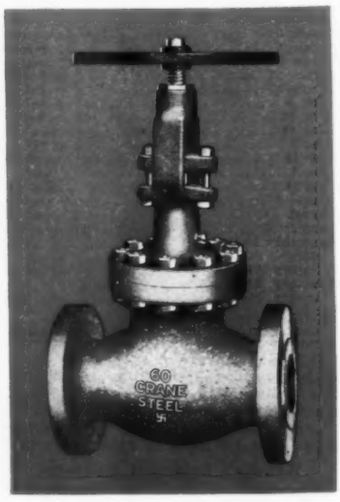


Series 40 Cast Steel Globe Valve No. 161-X. Guided disc. For oil and general service. Flanged. With yoke. For pressures of 400 pounds at 750°F.; 375 pounds at 900°F.; and 325 pounds at 1000°F. (At left)



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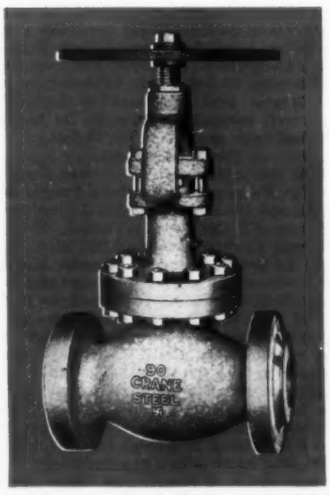
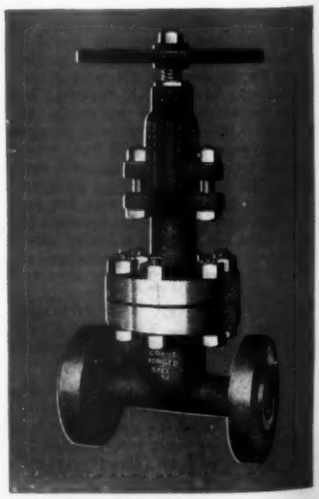
These valves are heir to forty-three years of laboratory research; exhaustive torsional tensile long-time, and flow-tests . . . pressure and temperature tests the most exhaustive and exact that engineers have so far been able to devise.



Series 150 Steel Globe Valve No. 189-X. Guided disc. For oil and general service. Flanged. For 1500 pounds pressure at 750°F.; 1350 pounds at 900°F.; and 1100 pounds at 1000°F. Non-shock working pressures to 3000 pounds at atmospheric temperatures. (At right)

Series 90 Cast Steel Globe Valve No. 183-X. Guided disc. For oil and general service. Flanged. For pressures to 900 pounds at 750°F.; 825 pounds at 900°F.; and 725 pounds at 1000°F. For non-shock working pressures to 2000 pounds at atmospheric temperatures. (At left)



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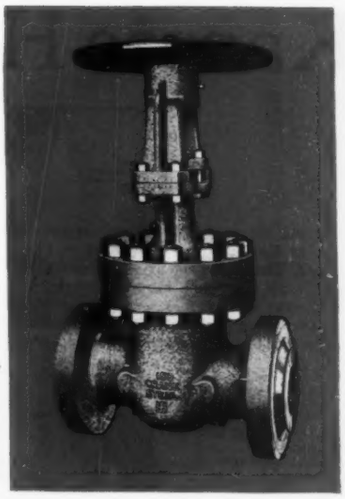

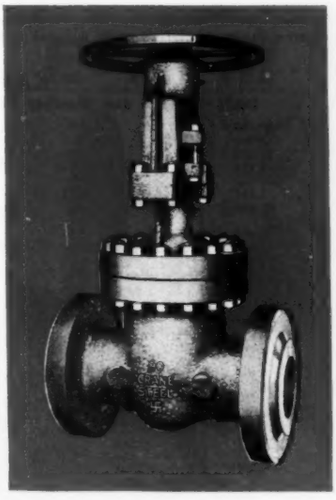

Series 90 Cast Steel Wedge Gate Valve No. 83-X. Disc rides on long, close-fitting machined guides. Outside screw and yoke. Flanged end. For 900 pounds working pressure at 750°F.; 825 pounds at 900°F.; and 725 pounds at 1000°F. Non-shock working pressures to 2000 pounds at atmospheric temperatures. (At left)

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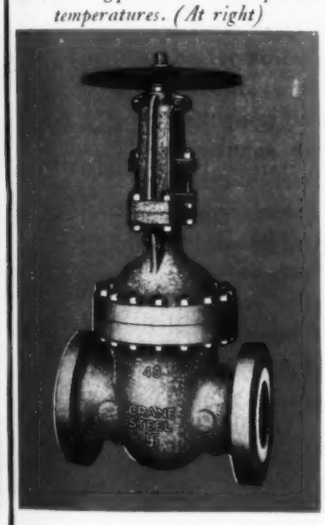

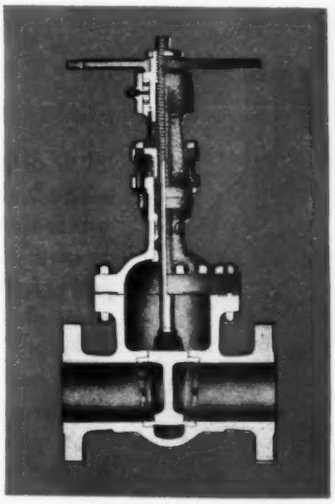

Series 40 Cast Steel Wedge Gate Valve No. 61-X. Disc rides on long, close-fitting machined guides. Outside screw and yoke. Flanged ends. For pressures to 400 pounds at 750°F.; 375 pounds at 900°F.; and 325 pounds at 1000°F. 800 pounds non-shock working pressures at atmospheric temperatures. (At left)

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Kansas Had Great Revival in Past Year

Numerous New Counties in the Oil and Gas Column. Important Pools Opened Held Back by Slack Demand for Oil

By W. A. Spinney
Staff Correspondent, Kansas Fields

During the year 1930 several important pools in Kansas were discovered and developed. The development work was scattered, with the important discoveries in the central and central western counties. An interesting drilling campaign was in progress in the extreme southwestern part of the State, where large gas reserves were opened after the announcement of a trunk pipe line into the area.

McPherson County in the central part of the State was active leading the State with 178 completed wells. The Voshell Pool was the most active with a total of 94 completed wells. The first production in the pool was found in August, 1929, oil coming from the Simpson sand which yielded large wells. Water made its appearance in that horizon and production began to decline which led to deeper drilling and in March, 1930, the Silicious line was found productive and resulted in renewed vigor among the operators and increased production at such a rate that the pool was credited with a potential of 60,000 bbls. a day as early as May. The increase in production in the area was as rapid the few pipe line companies were

KANSAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
SEDGWICK COUNTY:													
Wright—													
Daily average	18,432	18,124	17,208	16,985	16,435	15,014	13,643	12,961	9,441	11,076	9,821	8,910	
Month	571,392	507,472	533,448	509,550	509,485	450,420	422,933	401,791	283,230	343,356	294,630	276,210	5,102,9
Greenwich—													
Daily average	3,019	3,102	3,020	3,162	2,659	2,632	2,655	2,511	2,429	2,959	2,673	2,261	
Month	93,589	86,856	93,620	94,860	82,429	78,960	82,305	77,841	72,870	91,729	80,190	70,091	1,005,2
Robbins—													
Daily average	440	432	403	389	368	373	353	337	324	315	301	277	
Month	13,640	12,096	12,493	11,670	11,408	11,190	10,943	10,447	9,720	9,765	9,030	8,587	130,9
Eastborough—													
Daily average	...	...	...	...	...	...	...	3,291	5,387	7,775	12,186	10,233	
Month	...	...	...	...	...	...	...	102,021	161,610	241,025	365,580	317,223	1,187,4
Miscellaneous—													
Daily average	1,019	1,022	1,039	873	845	912	1,661	486	501	445	430	376	
Month	31,589	28,616	32,209	26,190	26,195	27,360	51,491	15,066	15,030	13,795	12,900	11,656	292,9
MARION COUNTY:													
Florence-Urschel—													
Daily average	409	478	472	489	474	476	439	416	427	405	275	227	
Month	12,679	13,384	14,632	14,670	14,694	14,280	13,609	12,896	12,810	12,555	8,250	7,037	151,4
Peabody—													
Daily average	1,250	1,194	1,091	882	794	801	770	773	755	804	723	694	
Month	38,750	33,432	33,821	26,460	24,614	24,030	23,870	23,963	22,650	24,924	21,690	21,514	318,7
Covert-Sellers—													
Daily average	427	401	447	440	415	411	364	414	673	651	527	503	
Month	13,237	11,228	13,857	13,200	12,865	12,330	11,284	12,834	20,190	20,181	15,810	15,593	172,6
Lost Springs—													
Daily average	545	695	666	613	599	589	897	844	894	838	783	741	
Month	16,895	19,460	20,646	18,390	18,569	17,670	27,807	26,164	26,820	25,978	23,490	22,971	264,8
Davis—													
Daily average	802	910	823	782	813	801	351	713	783	785	462	463	
Month	24,862	25,480	25,513	23,460	25,203	24,030	10,881	22,103	23,490	24,335	13,860	14,353	257,5
BUTLER COUNTY:													
Elbing—													
Daily average	2,067	2,073	2,013	2,013	2,010	2,003	1,742	1,656	1,817	2,001	1,893	1,744	
Month	63,767	58,044	62,403	60,390	62,310	60,090	54,002	51,305	54,510	62,031	56,790	54,064	699,7
Potwin—													
Daily average	347	511	499	481	452	461	392	429	448	438	390	393	
Month	10,757	14,308	15,460	14,430	14,012	13,830	12,152	13,299	13,440	13,578	11,700	12,182	159,1
Cameron-Robinson—													
Daily average	605	605	594	569	725	703	560	549	783	857	866	762	
Month	18,755	16,940	18,414	17,070	22,475	21,090	17,360	17,019	23,490	26,567	25,980	23,622	248,7
Wilson-Dunkle—													
Daily average	1,444	1,628	1,550	1,597	1,531	1,534	1,556	1,568	1,475	1,530	1,432	1,385	
Month	44,764	45,584	48,050	47,910	47,461	46,020	48,236	48,608	44,250	47,430	42,960	42,935	554,2
Towanda—													
Daily average	1,842	1,858	1,771	1,715	1,731	1,697	1,972	1,740	1,704	1,751	1,711	1,672	
Month	57,102	52,024	54,901	51,450	53,661	50,910	61,132	53,940	51,120	54,281	51,330	51,832	644,0
Fox-Bush—													
Daily average	953	949	938	934	916	894	864	902	880	808	727	713	
Month	29,543	26,572	29,078	28,020	28,396	26,820	26,784	27,962	26,400	25,048	21,810	22,103	318,5
Nuttle-Koogler—													
Daily average	2,895	2,508	3,025	2,985	3,055	2,989	3,047	2,873	3,033	3,204	2,946	2,841	
Month	89,745	70,224	93,775	89,550	94,705	89,670	94,457	89,063	90,990	99,324	88,380	88,071	1,077,9
Eldorado—													
Daily average	6,131	6,415	6,804	6,729	6,830	6,782	6,756	6,747	6,516	6,819	6,523	6,369	
Month	190,061	179,620	210,924	201,870	211,730	203,460	209,436	209,157	195,480	211,389	195,690	195,579	2,414,2
Smock—													
Daily average	197	196	210	212	201	194	201	184	203	189	186	181	
Month	6,107	5,488	6,510	6,360	6,231	5,820	6,231	5,704	6,090	5,859	5,580	5,611	71,5
Leon-Weaver—													
Daily average	4,863	4,718	4,702	4,265	3,982	3,881	3,950	4,204	3,863	4,234	4,219	4,007	
Month	150,753	132,104	145,762	127,950	123,442	116,430	122,450	130,324	115,890	131,254	126,570	124,217	1,547,1
North Augusta—													
Daily average	767	846	858	868	836	829	842	881	1,369	1,358	1,609	1,403	
Month	23,777	23,688	25,598	26,040	25,916	24,870	26,102	27,311	41,070	42,098	48,270	43,493	379,2
South Augusta—													
Daily average	1,054	1,102	1,182	1,187	1,174	1,166	1,141	1,155	1,093	1,061	1,000	987	
Month	32,674	30,856	36,642	35,610	36,394	34,986	35,371	35,805	32,790	32,891	30,000	30,597	404,8
Sluss—													
Daily average	207	230	225	224	525	417	219	236	211	214	246	220	
Month	6,417	6,440	6,975	6,720	16,275	12,510	6,789	7,316	6,330	6,634	7,380	6,820	96,6
Douglass—													
Daily average	108	108	105	97	96	91	96	95	92	99	97	92	
Month	3,348	3,024	3,255	2,910	2,976	2,730	2,976	2,945	2,760	3,069	2,910	2,883	35,7
Keighly—													
Daily average	493	490	303	476	461	452	420	442	431	427	431	401	
Month	15,283	13,720	9,393	14,280	14,291	13,560	13,020	13,702	12,930	13,237	12,930	12,431	158,7
Benton—													
Daily average	59	51	51	49	42	42	61	61	62	65	59	60	
Month	1,829	1,428	1,581	1,476	1,302	1,260	1,891	1,891	1,860	2,015	1,770	1,860	20,1
Blankenship—													
Daily average	704	746	852	864	826	818	809	758	792	747	455	442	
Month	21,824	20,888	26,412	25,920	25,606	24,540	25,079	23,498	23,760	23,157	13,650	13,702	248,0
GREENWOOD AND WOODSON COUNTIES:													
Sallyards—													
Daily average	942	1,045	1,097	1,025	1,016	1,002	933	973	946	913	899	802	
Month	29,202	29,260	34,007	30,750	31,496	30,060	28,923	30,163	28,380	28,303	26,970	24,862	352,3
Teeter-Pixley-Scott—													
Daily average	4,606	3,844	3,952	4,125	4,075	3,990	4,036	3,864	3,996	3,953	3,891	3,496	
Month	142,786	107,632	122,512	123,750	126,325	119,700	125,116	119,784	119,880	122,543	116,730	108,376	1,455,1
Virgil—													
Daily average	5,228	5,422	5,482	5,619	5,666	5,611	5,325	5,094	5,536	5,426	5,430	4,116	
Month	162,068	151,816	169,942	168,570	175,646	168,330	165,075	157,914	166,080	168,206	162,900	127,596	1,944,2
Thrall-Burkett—													
Daily average	1,136	1,231	1,182	1,111	1,131	1,108	1,134	1,107	1,152	1,159	997	895	
Month	35,216	34,468	36,642	33,330	35,061	33,240	35,154	34,317	34,560	35,929	29,910	27,745	405,5
Seeley—													
Daily average	7,417	6,760	7,709	7,306	7,370	7,269	7,211	7,172	7,248	6,993	6,092	5,417	
Month	229,927	189,280	238,979	219,180	228,470	218,070	223,541	222,332	217,440	216,783	182,760	167,927	2,554,2
Pelhamus—													
Daily average	677	715	728	714	703	697	672	635	673	671	660	604	
Month	20,987	20,020	22,568	21,420	21,793	20,910	20,832	19,685	20,190	20,801	19,800	18,724	247,7
Miscellaneous—													
Daily average	741	799	795	804	769	803	955	903	847	879	933	844	
Month	22,971	22,372	24,645	24,120	23,839	24,090	29,605	27,993	25,410	27,249	27,990	26,164	306,4

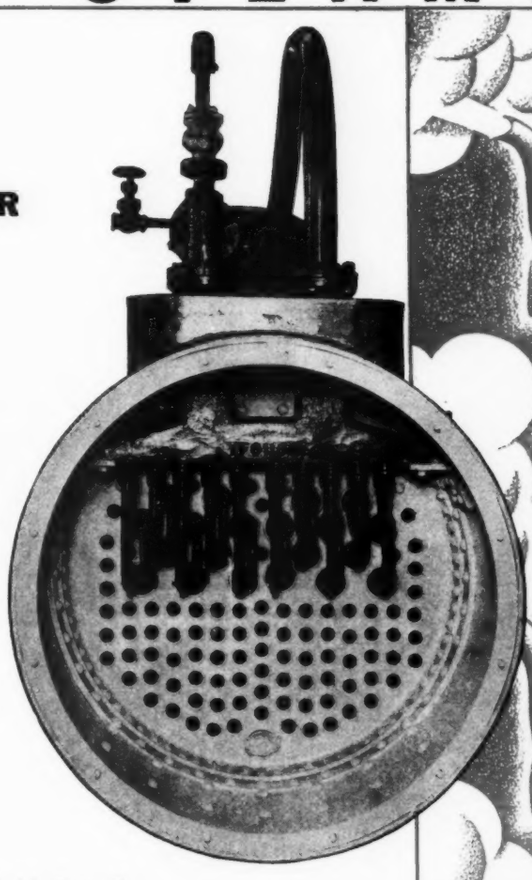
(Table Continued on Next Page)

FARRAR & TREFTS

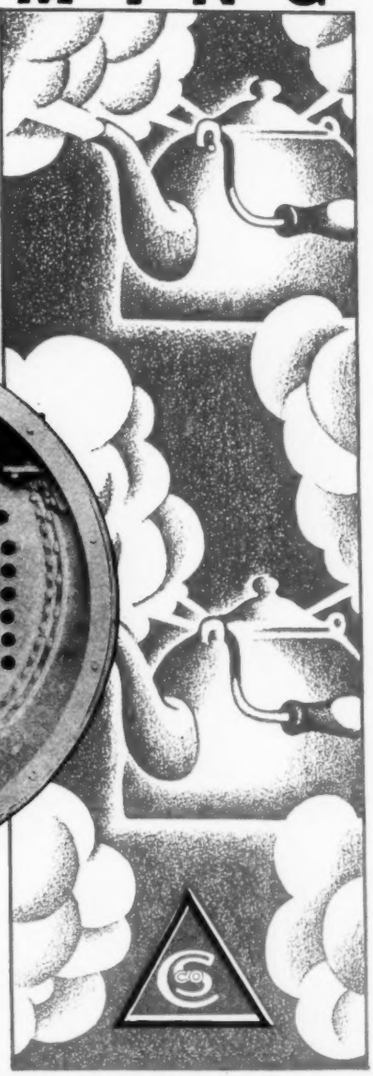
CONTINENTAL "CODE" BOILERS

EASY STEAMING

WITH ELESCO SUPERHEATER



This 125 H. P. 300 lb. W.P. Continental Code Superheater Boiler combines the advantages of Superheat with good boiler design and produces most effective steam generating units for rotary drilling. It has been produced in response to a growing demand by contractors who recognize superheated steam as contributing materially to the speed of rotary drilling operations.



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unable to handle the oil, and proration was made effective and the actual production ordered curtailed to 21,000 bbls. a day, which was then the pipe line capacity of the area. Later it was necessary to reduce this to 11,000 bbls. per day.

Largest Well in State

Shell Petroleum Corp.'s No. 1 Miller, SW cor. SE, Section 1-20-2w, in the Ritz Pool, in McPherson County, was the largest well completed in the State during the year. It made 600 bbls. an hour and 2,600 bbls. in four hours under a 200-pound back pressure. It was estimated to be good for 12,000 bbls. per day.

The Ritz Pool, in McPherson County, without any fuss being made over it developed into one of the important producing districts in the county. The first wells in the area were gas wells from the chat horizon. These led to other drilling on nearby acreage which found oil in the same formation. After its early development the wells were not particularly long lived. An important discovery was made 2 miles northeast of other production in the Ritz area by the Mid-Kansas Oil & Gas Co.'s No. 1 Garrett, SW cor. NE, Section 30-19-1w, which found the Simpson sand productive. The well flowed 3,485 bbls. of oil in 24 hours from sand at 3,405-14 feet. The producing sand was about 500 feet below the chat horizon and opened a new producing formation. The well was located about 15 miles northeast of the Voshell Pool, which is also a Simpson sand producing area. The offset were soon completed and the potential increased to an estimated 30,000 bbls. a day for the Ritz area.

Decker Gas Field

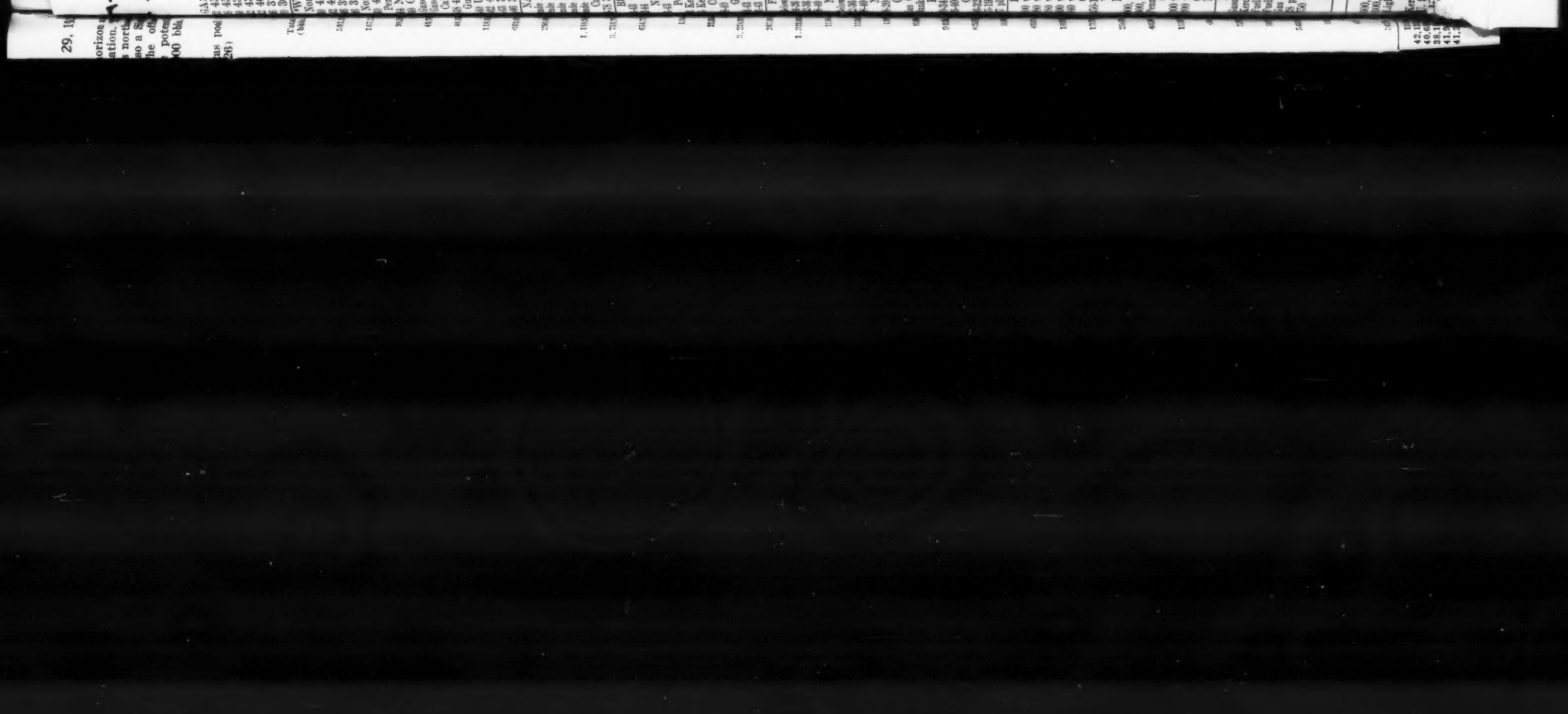
As a gas field the Decker gas pool

(Continued on Page 226)

KANSAS (Continued)

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
COWLEY COUNTY:													
Rainbow Bend—													
Daily average	1,239	1,227	1,530	1,596	1,788	1,691	1,628	1,782	1,747	1,676	1,609	1,570	
Month	38,409	34,356	47,430	47,880	55,428	50,730	50,468	55,242	52,410	51,956	48,270	48,670	581,249
Slick—													
Daily average	498	486	473	478	473	469	412	468	445	447	436	412	
Month	15,438	13,608	14,663	14,340	14,663	14,070	12,772	14,508	13,350	13,857	13,080	12,772	167,121
Graham—													
Daily average	211	215	235	261	286	274	315	326	290	290	261	262	
Month	6,541	6,020	7,285	7,830	9,176	8,220	9,765	10,075	8,700	8,990	7,830	8,122	98,514
Rock—													
Daily average	140	131	137	134	151	149	155	126	134	149	115	114	
Month	4,340	3,668	4,247	4,020	4,681	4,470	4,805	3,906	4,026	4,619	3,450	3,534	49,769
Clark—													
Daily average	112	113	114	105	101	104	90	94	134	141	111	116	
Month	3,472	3,164	3,534	3,150	3,131	3,120	2,790	2,914	4,020	4,371	3,330	3,596	40,592
Eastman—													
Daily average	358	347	310	292	306	299	301	312	343	338	361	341	
Month	11,098	9,716	9,610	8,760	9,486	8,970	9,331	9,672	10,290	10,478	10,830	10,571	118,813
Winfield-New Salem—													
Daily average	1,893	1,983	1,843	1,939	1,898	1,903	1,737	1,767	1,906	1,747	1,620	1,581	
Month	58,683	55,524	57,133	58,170	58,838	57,090	53,847	54,777	57,180	54,157	48,600	49,011	663,010
Miscellaneous—													
Daily average	810	827	812	884	911	930	787	828	822	818	686	622	
Month	25,110	23,156	25,172	26,520	28,241	27,900	24,397	25,668	24,660	25,358	20,580	19,282	296,044
McPHERSON COUNTY:													
Ritz—													
Daily average				781	5,128	4,921	4,317	3,782	4,492	5,028	5,392	5,014	
Month				23,430	158,968	147,630	133,827	117,273	134,760	155,868	161,760	155,434	1,188,950
Voshell—													
Daily average				17,884	21,636	21,305	12,940	9,846	9,977	8,616	8,109	12,783	
Month				536,520	670,716	639,150	401,140	305,226	299,310	267,096	243,270	396,273	3,758,701
Miscellaneous—													
Daily average	2,889	4,950	10,070	151	150	153	130	189	360	309	1,366	1,012	
Month	89,559	138,600	312,170	4,530	4,650	4,590	4,030	5,859	10,800	9,579	40,980	31,372	656,719
OTHER COUNTIES.													
Edwards—													
Daily average												108	
Month												3,348	3,348
Rooks—													
Daily average	84	74	59	56	56	55	65	55	55	56	64	63	
Month	2,604	2,072	1,829	1,680	1,736	1,650	2,015	1,705	1,650	1,736	1,920	1,953	23,550
Sumner—													
Daily average	8,315	8,227	8,115	9,407	9,048	8,868	9,330	9,007	9,090	9,135	9,040	8,416	
Month	257,765	230,356	251,565	282,210	280,488	266,040	289,230	279,217	272,700	283,185	271,200	260,896	3,224,852
Rice—													
Daily average	607	1,270	1,431	767	766	782	695	538	497	477	507	510	
Month	18,817	35,560	44,361	23,010	23,746	23,460	21,545	16,678	14,910	14,787	15,210	15,810	267,894
Russell—													
Daily average	3,870	3,768	3,729	3,879	3,909	3,878	3,773	3,773	3,693	3,272	3,261	2,895	
Month	119,970	105,504	115,599	116,370	121,179	116,340	116,963	116,963	110,790	101,432	97,830	89,745	1,328,685
Reno—													
Daily average	25	21	24	24	24	23	27	66	40	41	29	33	
Month	775	588	744	720	744	690	837	2,046	1,200	1,271	870	1,023	11,508
Harvey—													
Daily average	6	12	10	10	12	11	6	136	123	28	48	42	
Month	186	336	310	304	372	330	186	4,216	3,690	868	1,440	1,302	13,540
Trego—													
Daily average	20	12	20	20	17	16	.....	...	17	17	17	19	
Month	620	336	620	599	527	480	.....	...	510	527	510	589	5,319
Coffey—													
Daily average	285	286	279	274	283	279	166	167	171	303	301	267	
Month	8,835	8,008	8,649	8,220	8,773	8,370	5,146	5,177	5,130	9,393	9,030	8,277	93,000
Chautauqua—													
Daily average	2,998	2,022	3,402	3,402	2,795	2,946	2,174	3,402	3,407	2,029	1,990	1,979	
Month	92,938	56,896	105,462	102,060	86,645	88,380	67,394	105,462	102,210	62,899	59,700	61,349	991,395
Elk—													
Daily average	1,793	1,845	1,767	1,750	1,799	1,804	1,674	1,673	1,691	1,597	1,605	1,583	
Month	55,583	51,660	54,777	52,500	55,769	54,120	51,894	51,863	50,730	49,507	48,150	49,073	625,626
Wilson—													
Daily average	157	155	157	149	154	151	152	156	154	163	147	149	
Month	4,867	4,340	4,867	4,470	4,774	4,530	4,712	4,836	4,620	5,053	4,410	4,619	55,089
Montgomery—													
Daily average	1,315	1,136	1,202	3,528	1,140	1,162	1,214	1,157	1,147	1,052	1,004	1,016	
Month	40,765	31,808	37,262	105,840	35,340	34,860	37,634	35,867	34,410	32,612	30,120	31,496	488,014
Allen—													
Daily average	457	400	397	485	485	476	483	477	472	480	473	469	
Month	14,167	11,200	12,307	14,550	15,035	14,280	14,973	14,787	14,160	14,880	14,190	14,539	168,843
Neosho—													
Daily average	513	497	488	485	500	488	497	491	488	493	479	471	
Month	15,903	13,916	15,128	14,550	15,500	14,640	15,407	15,221	14,640	15,283	14,370	14,601	179,159
Lyon—													
Daily average	903	792	756	736	699	689	720	628	633	612	601	609	
Month	27,993	22,176	23,436	22,080	21,669	20,670	22,320	19,468	18,990	18,972	18,030	18,879	254,633
Miami—													
Daily average	965	763	761	1,118	1,206	1,191	1,369	1,366	1,371	1,136	1,035	1,029	
Month	29,915	21,364	23,591	33,540	37,386	35,730	42,439	42,346	41,130	35,216	31,050	31,899	405,606
Franklin—													
Daily average	304	255	256	314	329	326	330	328	325	319	288	293	
Month	9,424	7,140	7,936	9,420	10,199	9,780	10,230	10,168	9,750	9,889	8,640	9,083	111,659
Douglas—													
Daily average	12	12	12	12	12	11	11	12	13	15	15	14	
Month	372	336	372	360	372	330	341	372	390	465	450	434	4,584
Bourbon—													
Daily average	103	48	47	80	82	81	62	61	60	45	19	22	
Month	3,193	1,344	1,457	2,400	2,542	2,430	1,922	1,891	1,800	1,395	570	682	21,626
Linn—													
Daily average	121	122	121	149	172	166	144	144	142	143	126	121	
Month	3,751	3,416	3,751	4,470	5,332	4,980	4,464	4,464	4,260	4,433	3,780	3,751	50,852
Anderson—													
Daily average	1,632	1,747	1,750	1,586	1,586	1,567	1,482	1,479	1,477	1,490	1,420	1,427	
Month	50,592	48,916	54,250	47,580	49,166	47,010	45,973	45,849	44,310	46,190	42,600	44,237	566,673
Labette—													
Daily average	27	27	26	27	27	26	24	25	26	17	14	16	
Month	837	756	806	810	837	780	744	775	780	527	420	496	8,561
Chase—													
Daily average	12	13	13	21	20	19	18	19	19	20	18	19	
Month	372	364	403	630	620	570	558	589	570	620	540	589	6,425
Woodson—													
Daily average	1,097	917	903	1,097	851	847	983	977	972	875	871	862	
Month	34,007	25,676	27,993	32,910	26,381	25,410	30,473	30,287	29,160	27,125	26,130	26,722	342,274
Daily average	105,587	105,918	113,045	124,475	128,335	125,502	114,239	112,630	113,517	115,223	115,311	110,731	115,406
Total 1930	3,273,197	2,965,704	3,504,395	3,734,253	3,978,385	3,765,060	3,541,409	3,491,530	3,405,510	3,571,913	3,459,330	3,432,661	42,123,347
Total 1929	2,861,641	2,557,968	2,951,076	3,112,740	3,665,099	3,636,150	3,867,157	3,816,555	3,780,690	3,429,468	3,430,560	3,549,066	40,658,170
Total 1928	3,319,325	3,079,887	3,379,031	3,412,360	3,367,509	3,202,050	3,171,548	3,147,058	3,047,250	3,058,460	2,977,800	2,988,400	38,150,878
Total 1927	3,763,879	3,352,076	3,675,143	3,516,930	3,704,314	3,437,580	3,454,082	3,442,240	3,341,340	3,509,169	3,313,650	3,427,174	41,943,577
Total 1926	3,250,536	2,877,812	3,334,887	3,330,120	3,516,640	3,366,450	3,582,267	3,681,436	3,450,060	3,714,637	3,593,490	3,654,156	41,346,531



The Oil and Gas Journal's Table for 19[illegible]30, Giv[illegible]

	January				February				March		
	7	14	21	28	4	11	18	25	4	11	18
GASOLINE AND NAPHTHA—Oklahoma (Group 3):											
42 450 endpoint	.06½	.06½	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼
43 450 endpoint	.06¾	.06¾	.06	.06	.06	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾
40 437 endpoint (U. S. Motor)*	.0692	.0692	.0653	.0658	.0655	.065	.0652	.065	.065	.065	.067
42 437 endpoint*	.0687	.0663	†.06¼	.0663	†.06¼	.0637	.065	†.06¼	†.06¼	.065	.06½
42 400 endpoint*	.0744	.0738	.0696	.0725	.0717	.0675	.0675	.0675	.0675	.0675	.067
43 375 endpoint*	.08	.0788	.08	.08	†.07¼	.0775	.0775	.0775	.075	†.07¼	.077
40 360 endpoint	.08	.08	.07¾	.07⅞	.07½	.07½	.07½	.07½	.07½	.07½	.07½

*Weighted average prices as reported by representative refiners. Sales to jobbers only. †No sales reported. Prices show general market.

North Texas:											
40 437 endpoint (U. S. Motor)	.06¼	.06¼	.06	.06	.05¾	.05¾	.05¾	.05¾	.05⅝	.05⅝	.05⅞
42 400 endpoint	.06½	.06½	.06¼	.06¼	.06⅜	.06⅜	.06⅜	.06⅜	.06	.06	.06⅜
43 390 endpoint	.07⅜	.07¼	.07	.07	.06¾	.06⅝	.06⅝	.06⅝	.06½	.06½	.06⅝
43 375 endpoint	.07⅜	.07⅝	.07¼	.07¼	.07⅛	.07	.07⅛	.07	.07	.07	.07
North Louisiana:											
40 437 endpoint (U. S. Motor)	.07	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾
Pennsylvania:											
44 Naphtha	.07¼	.07¼	.07¼	.07	.07	.07	.07	.07	.07¼	.07¼	.07
40 Gasoline	.07¾	.07¾	.07½	.07½	.07½	.07½	.07½	.07½	.07¾	.07½	.07
Gasoline	.08	.08	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.08	.07¾	.07
Gasoline	.08½	.08½	.08¼	.08¼	.08¼	.08¼	.08	.08¼	.08½	.08	.08
California:											
58 437 endpoint (U. S. Motor), domestic†	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
Gulf Coast (Export):											
40 U. S. Motor	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08	.08	.08
42 400 endpoint	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09	.09	.09
43 390 endpoint	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¼	.09¼	.09¼
40 375 endpoint	.10	.10	.10	.10	.10	.10	.10	.10	.09½	.09½	.09½
NATURAL GASOLINE—Oklahoma (Group 3):											
Pale A, 72-79.9, 375 e.p., rec. 90%	.05½	.05¼	.05¼	.05⅝	.05⅝	.05½	.05½	.05½	.05½	.05½	.05⅝
Pale AA, 80-87.9, 375 e.p., rec. 90%	.05½	.05	.05	.05¼	.05	.05¼	.05¼	.05⅜	.05⅜	.05⅜	.05½
Pale B, 76-83.9, 375 e.p., rec. 85%	.05	.04¼	.04½	.04½	.04¼	.04⅜	.04½	.04⅝	.04½	.04½	.04⅝
Pale BB, 84-92, 375 e.p., rec. 85%	.05	.04⅛	.04⅛	.04¼	.04	.04¼	.04¼	.04½	.04⅜	.04½	.04¾
Pale C, 80-92, 375 e.p., rec. 78%	.05	.04	.04	.04⅛	.04	.04	.04⅛	.04½	.04⅜	.04⅜	.04¼
California:											
78 375-390 endpoint	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.07¾	.07⅜
BURNING OIL—Oklahoma (Group 3):											
42 water white Kerosene	.04⅛	.04⅛	.04	.04	.04	.04	.04⅛	.04⅛	.04⅛	.04	.04¼
44 water white Kerosene	.04⅜	.04½	.04⅜	.04⅜	.04¼	.04¼	.04⅜	.04⅜	.04⅜	.04¼	.04¼
North Texas:											
43 water white Kerosene	.04	.04⅛	.03⅞	.04	.04	.04	.04	.04	.04	.03⅞	.04
Pennsylvania:											
Kerosene, prime white	.05¾	.05¾	.05¾	.05¾	.05¾	.05½	.05½	.05½	.05¾	.05¾	.05¾
Kerosene, water white	.06	.06	.06	.06	.06	.05¾	.05¾	.05¾	.06	.06	.05⅞
California:											
40 water white Kerosene (high burning test)	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04½	.04½
Gulf Coast (Export):											
42 prime white	.07	.07	.07	.07	.07	.07	.07	.07	.06	.06	.06
43 water white	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07
FUEL OIL—Oklahoma (Group 3):											
Below 18 Fuel Oil, per bbl.	.70	.70	.70	.70	.70	.70	.70	.70	.70	.67½	.67½
18-28 Fuel Oil, per bbl.	.90	.90	.90	.90	.95	.90	.90	.80	.80	.80	.82½
26-36 Gas Oil (industrial)	.02⅞	.02⅞	.02¾	.02¾	.02¾	.02¾	.02⅝	.02½	.02½	.02½	.02½
34-40 Straw Distillate	.03⅝	.03⅝	.03½	.03½	.03⅜	.03⅜	.03⅜	.03⅛	.03⅛	.03	.03
North Texas:											
Below 20 Fuel Oil, per bbl.	.65	.65	.60	.60	.60	.60	.60	.60	.60	.57½	.57½
26-36 Gas Oil (industrial)	.02⅞	.02¾	.02¾	.02⅝	.02⅝	.02½	.02½	.02½	.02⅜	.02⅜	.02⅜
34-40 Straw Distillate	.03¾	.03⅝	.03⅜	.03⅜	.03⅜	.03⅛	.03⅛	.03	.02⅞	.03	.03
North Louisiana:											
18-20 Fuel Oil, per bbl.	.80	.80	.80	.80	.85	.85	.85	.85	.85	.85	.85
Gulf Coast (South Texas):											
Gas Oil	.04	.04	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾
Bunker C Fuel (cargo lots), per bbl.	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65
Pennsylvania:											
30-34 Fuel Oil	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04¾	.04¾	.04½
38-40 Fuel Oil	.04⅝	.04⅝	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾
California:											
32 Distillate	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
35-39 Fuel Oil, Bunker (at tidewater)	.70	.70	.70	.70	.70	.70	.70	.70	.70	.70	.70
37 plus Diesel, per bbl.	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90
LUBRICATING OIL AND WAX—Oklahoma (Group 3):											
200 vis., 3 color, 20-25 cold test	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05½	.05¾
180 vis., 3 color, 23-28 cold test	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.10
180 vis., 5 color, 23-28 cold test	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
200 vis., 3 color, 23-28 cold test	.10¾	.10¾	.10¾	.10¾	.10¾	.10¾	.10¾	.10¾	.10¾	.11½	.11
200 vis., 5 color, 25-30 cold test	.12¾	.12¾	.09¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12	.12¾
Cylinder Stocks: 600, steam refined, light green	.10	.10	.10	.10	.10	.10	.10	.10	.10	.09	.09
150-160 vis., D color, Bright Stock (10-25 C.T.)	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37½	.37
Waxes: 124-126 White Crude Scale Wax	.02¾	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02
Pennsylvania: 200, 3 color	.24	.24	.24½	.24½	.24½	.24½	.25	.25	.25½	.25½	.25
600, steam refined	.23½	.22½	.22½	.22½	.22½	.22½	.22½	.22½	.24	.24	.23
600, Pennsylvania flash (below 35 C.T.)	.30½	.29½	.29½	.29½	.30½	.30½	.29½	.30½	.31	.32	.32
Pennsylvania Bright Stocks	.43	.42	.41	.41	.41	.42	.41½	.40	.40	.40	.40
Gulf Coast (South Texas):											
200 vis., 3 color, pale oil	.08½	.08½	.08½	.08½	.09¼	.09¼	.09¼	.09¼	.09¼	.09¼	.09¼
200 vis., 5-6 color, red oil	.07	.07	.07	.07	.08½	.08½	.08½	.08½	.08½	.08½	.08½
California: 200 vis., 2½-3 color	.11½	.11½	.11½	.11½	.11½	.11½	.10¼	.11½	.11½	.11½	.11½
Red Neutral: 200 vis., 4½-5 color	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
NEW YORK (BAYONNE) REFINERY PRICES—											
Gasoline, U. S. Motor, 58-60, 437 e.p.	.08⅝	.08⅝	.08⅝	.08⅝	.08⅝	.08⅝	.08½	.08½	.08¼	.08¼	.08½
Kerosene, water white, 41-43	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾
Fuel Oil, Bunker "C," 14-16°	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Fuel Oil, Diesel, 28-30, per bbl.†	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Gas Oil, 28 plus gravity	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾
28 pale Paraffin Oil, tank car	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼
150 red Paraffin Oil, tank car	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½
Refined Wax: 120-122 a.m.p., per lb.	.03⅞	.03¾	.03¾	.03¾	.03⅞	.03⅞	.03⅞	.03⅞	.03⅝	.03⅝	.03⅝
Petrolatum in bbls., in carload lots, per lb.: Amber	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜

*Lighterage, 5 cents a barrel extra. †Lighterage 6.5 cents per barrel.

NEW YORK (BAYONNE) EXPORT PRICES—											
600, steam refined Cylinder Stocks, in bbls.	.31	.31	.31	.31	.30	.30	.30	.30	.30	0 .31	.31
600, Pennsylvania flash	.40	.40	.40	.40	.40	.40	.40	.40	.40	60 .39	.39
Light 140-150 Bright Stocks	.52	.50	.50	50	.49½	.49½	.49½	.49½	.49½	48½ .48	.48
LOS ANGELES EXPORT PRICES—											
Kerosene, water white	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04 .04	.04
91 Motor Gasoline, 53-55, 437 e.p.*	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼ .06¼	.06¼

*For coastwise and off-shore shipments.

Table for 1930 Showing Date and Amo[illegible]

(PRIC[illegible]

MIDDLE WESTERN — STEPHENS— — Jan. 1 — Apr. 1 — Oct. 30 — TEXAS PAN[illegible]

30, Giving Low Weekly Quotations of R

PRICES GIVEN IN CENTS PER GALLON UNLESS OTH

April						May				June					
25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	GASOLINE AND
.06¼	.06¼	.06¼	.07	.07	.07	.07	.06⅝	.06¾	.06¾	.06⅝	.06½	.06¼	.06¼	.06	50-52 450 endpoint
.06	.06	.06¼	.07	.07	.07	.07	.06¾	.06¾	.06½	.06¼	.06¼	.06¼	.06¼	.06	56-58 450 endpoint
.065	.06625	.0675	.0679	.075	†.07	.075	.075	.075	.0729	.07375	.0725	.07	.06937	.06765	58-60 437 endpoint (U
†.06½	.06½	.0675	.075	.075	.075	†.07¼	†.07¼	†.07¼	†.07	.07625	†.07	.07¼	†.06¼	†.06¼	60-62 437 endpoint*
.0675	.071	.075	.075	†.07½	.07½	.0775	†.07¾	†.07¼	†.07¼	.0775	†.07¼	.07375	.07375	.07375	60-62 400 endpoint*
†.07¼	.075	.07375	.0788	†.07¾	.0812	.0812	.0812	†.07½	.0812	†.07¼	.08	†.07	†.07	.08	64-66 375 endpoint*
.07⅝	.07⅝	.07¾	.08¼	.08¼	.08¼	.08¼	.08	.07¾	.07½	.07½	.07½	.07¼	.07¼	.07¼	68-70 360 endpoint
															*Weighted averag
															North Texas:
.06¼	.06¼	.06½	.07	.07	.07	.07	.06¾	.06¾	.06⅝	.06½	.06⅝	.06⅛	.06	.05⅞	58-60 437 endpoint (U
.06½	.06⅝	.06¾	.07¼	.07¼	.07¼	.07¼	.07⅛	.07	.06¾	.06¾	.06⅝	.06⅜	.06⅜	.06¼	60-62 400 endpoint
.06¾	.06¾	.06⅞	.07½	.07½	.07½	.07½	.07⅜	.07¼	.07	.06⅞	.06¾	.06⅝	.06½	.06½	64-66 390 endpoint
.07¼	.07¼	.07⅜	.07½	.07⅝	.07⅝	.07⅝	.07½	.07½	.07¼	.07¼	.07¼	.07	.06¾	.06¾	64-66 375 endpoint
															North Louisiana:
.06¾	.07	.07	.07½	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07½	.07⅛	.07⅛	.07	.07	58-60 437 endpoint (U
															Pennsylvania:
.07¼	.07¼	.07¼	.07¼	.07¼	.07½	.07½	.07¾	.07¾	.07¾	.07¾	.07½	.07½	.07½	.07¼	52-54 Naphtha
.07½	.07½	.07½	.07¾	.07¾	.08	.08	.08¼	.08¼	.08¼	.08¼	.08¼	.08¼	.08¼	.08	58-60 Gasoline
.07¾	.07¾	.08	.08	.08	.08¼	.08¼	.08¾	.08¼	.08½	.08⅝	.08¼	.08¼	.08¼	.08¼	60 Gasoline
.08	.08	.08¼	.08½	.08½	.08¾	.08¾	.09	.08¾	.08¾	.08¾	.08⅝	.08½	.08½	.08½	64 Gasoline
															California:
.09	.08	.07½	.07½	.07½	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	54-58 437 endpoint (U
															Gulf Coast (Expo
.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	58-60 U. S. Motor
.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	60-62 400 endpoint
.09¼	.09¼	.09¼	.09¼	.09¾	.09¾	.09¼	.09¼	.09½	.09¼	.09¼	.09¼	.09¼	.09¼	.09¼	61-63 390 endpoint
.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	64-66 375 endpoint
															NATURAL GAS
.05¾	.05¾	.05¾	.06½	.06½	.06½	.06½	.06½	.06½	.06⅜	.06⅛	.06⅛	.06	.05½	.05¼	Grade A, 72-79.9, 375
.05⅝	.05⅝	.05¾	.06½	.06½	.06½	.06½	.06½	.06⅜	.06⅛	.06	.06	.05¾	.05¼	.05	Grade AA, 80-87.9, 37
.05	.05	.05	.05¾	.06½	.06½	.06½	.06¾	.06¼	.06	.05¾	.05½	.05½	.05¼	.04½	Grade B, 76-83.9, 375
.04¾	.04⅞	.05	.05½	.06½	.06½	.06½	.06¼	.06	.06	.05¾	.05¼	.05¼	.05¼	.04½	Grade BB, 84-92, 375
.04⅝	.04⅝	.04⅞	.05½	.06½	.06½	.06½	.06¼	.06	.05¾	.05½	.05¼	.05¼	.05¼	.04½	Grade C, 80-92, 375 e
															California:
.07¾	.07¼	.07	.06⅜	.06¾	.06⅜	.06⅜	.06¾	.06¾	.06¾	.06⅜	.06¾	.06⅜	.06¾	.06¾	75-78 375-390 endpoi
															BURNING OIL
.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04⅛	.04	.03⅞	.03⅞	.03¾	.03⅜	.03⅜	.03⅝	41-43 water white K
.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04½	.04½	.04⅜	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04	42-44 water white K
															North Texas:
.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04	.03¾	.03¾	.03¾	.03⅝	.03½	.03½	.03½	41-43 water white K
															Pennsylvania:
.05¾	.05¾	.05¾	.05½	.05½	.05½	.05¼	.05¼	.05¼	.05¼	.05¼	.04¾	.04¾	.04⅝	.04⅜	43 Kerosene, prime
.05⅞	.05¾	.05¾	.05¾	.05¾	.05¾	.05½	.05½	.05½	.05½	.05½	.05	.05	.04¾	.04¾	45 Kerosene, water
															California:
.04½	.04½	.04½	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	38-40 water white K
															Gulf Coast (Exp
.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	41-43 prime white
.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	41-43 water white
															FUEL OIL—Ok
	.67½	.65	.62½	.57½	.57½	.55	.55	.52½	.52½	.52½	.52½	.50	.50	.47½	.47½	Below 18 Fuel Oil, p
	.82½	.82½	.82½	.80	.80	.70	.70	.70	.70	.70	.70	.65	.60	.57½	Below 18 Fuel Oil, per
	.02½	.02½	.02½	.02⅜	.02⅜	.02⅜	.02¼	.02¼	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	24-26 Fuel Oil, per
	.03⅛	.03	.03	.03	.03	.03	.02¾	.03	.03	.03	.03	.03	.02⅞	.02⅞	.02⅞	32-36 Gas Oil (indus
															38-40 Straw Distilla
															North Texas:
	.57½	.55	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.45	.45	.45	Below 20 Fuel Oil, pe
	.02⅜	.02⅜	.02¼	.02¼	.02¼	.02¼	.02¼	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02	.02	.02	32-36 Gas Oil (indus
	.03	.03	.02⅞	.02⅞	.02⅞	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	38-40 Straw Distilla
																North Louisiana
	.85	.75	.75	.75	.80	.80	.80	.80	.80	.80	.80	.75	.70	.70	.70	18-20 Fuel Oil, per
																Gulf Coast (Sou
	.03¾	.03¾	.03¾	.04	.04	.04	.04	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	Gas Oil
	.65	.75	.75	.75	.75	.75	.80	.75	.75	.80	.80	.80	.80	.80	.80	Bunker C Fuel (carg
																Pennsylvania:
	.04½	.04⅜	.04⅜	.04⅜	.04⅜	.04¼	.04	.04⅛	.03⅞	.03⅞	.03⅞	.03⅞	.03½	.03½	.03½	30-34 Fuel Oil
	.04½	.04⅜	.04½	.04⅜	.04⅜	.04¼	.04¼	.04¼	.04	.04	.04	.04	.03¾	.03¾	.03¾	36-40 Fuel Oil
																California:
	.02	.02	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	26-32 Distillate
	.70	.70	.65	.65	.65	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	15-19 Fuel Oil, Bunk
	.90	.90	.85	.85	.85	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	27 plus Diesel, per b
																LUBRICATING
	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	100 vis., 3 color, 20
	.09¾	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.09½	.09½	.09½	180 vis., 3 color, 23
	.09	.09	.09	.09	.09½	.09	.09	.09	.09	.09	.09	.09	.09	.08½	.08½	180 vis., 5 color, 23
	.11	.11½	.11½	.11½	.11½	.11½	.11½	.10½	.11½	.11½	.11½	.11½	.11½	.11	.11	200 vis., 3 color, 23
	.12¾	.13½	.13½	.13½	.13½	.13½	.13½	.13½	13½	.13½	.13½	.13½	.13½	.12½	.12½	240 vis., 5 color, 25
	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.10	.08	.08	Cylinder Stocks
	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.32	.32	.32	150-160 vis., D color,
	.02½	.02½	.02½	.02¼	.02¼	.02¼	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02	.02	.02	.02	Waxes: 124-12
	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.23½	.22½	.22½	.21	Pennsylvania:
	.24	.23	.23	.23	.23	.23	.23	.22½	.21½	.20	.20	.18	.15	.15	.12	600, steam refined
	.32	.31	.31	.31	.31	.31	.31	.31	.30	.29	.29	.27	.25	.22	.22	600, Pennsylvania fl
	.40	.40	.40	.39½	.39½	.39½	.39	.39	.39	.39	.38	.38	.33	.31	.30	.26	Pennsylvania Bright
																Gulf Coast (So
	.09¼	.09¼	.09¼	.09¼	.09¼	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	200 vis., 3 color, pal
	.08½	.08½	.08½	.08½	.08½	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	200 vis., 5-6 color,
	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	California: 200
	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	Red Neutral: 2
																NEW YORK
	.08¼	.08½	.08½	.08½	.08½	.08½	.08½	.09	.09	.09	.09	.09	.09	.09	.09	Gasoline, U. S. Mot
	.07¾	.07¾	.07¾	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07	.07	.07	.07	Kerosene, water wh
	1.05	1.05	1.05	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	Fuel Oil, Bunker "C
	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	Fuel Oil, Diesel, 28
¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	Gas Oil, 28 plus gra
.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	28 pale Paraffin Oi
.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	750 red Paraffin Oi
.03⅞	.03⅞	.03⅝	.03⅝	.03⅝	.03⅝	.03½	.03⅜	.03⅜	.03½	.03⅜	.03⅜	.03⅜	.02⅞	.02⅞	.02⅞	Refined Wax:
.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03¼	.03¼	.03¼	Petrolatum in b
																*Lighterage, 5
																NEW YORK
.0	.31	.31	.31	.31	.31½	.31½	.31½	.31½	.31½	.30½	.31½	.29½	.27	.27	.25	.22	600, steam refined
60	.39	.39	.39	.39	.39	.39	.39	.39	.39	.38½	.38½	.37	.37	.35	.33	600, Pennsylvania f
48½	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48	.47	.47	.45	.41	.37	Light 140-150 Brig
																LOS ANGELE
.04	.04	.04	.04	.04	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	Kerosene, water wh
.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	U. S. Motor Gasolin
																*For coastwise

and Amount of Changes in Crude Oil Pr

Representative Refined Products for Export a

ESS OTHERWISE NOTED

	July				August				September					October		
	8	15	22	29	5	12	19	26	2	9	16	23	30	7	14	2
LINE AND NAPHTHA—Oklahoma (Group 3):																
endpoint	.05¾	.05¾	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.05¾	.05¾	.05½	.0
endpoint	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.06	.06	.05¾	.05¾	.05¼	.0
endpoint (U. S. Motor)*	.06676	.066	.065	.0651	.0642	.0646	.0643	.063	.0625	.0624	.0633	.0634	.0627	.0629	.0619	.0
endpoint*	†.06¼	†.06	†.06	†.06	†.06	†.06	†.06	†.05¾	†.06	†.06	†.06¼	†.06¼	†.06¼	†.06¼	†.05¾	†
endpoint*	.0725	†.06¼	†.06⅜	.07125	.06932	.0694	.0712	.0688	.06875	.0681	.0688	.0688	.0681	.0681	.0663	.0
endpoint*	.0775	†.06½	†.06⅝	†.06⅝	.0675	†.06¾	†.06¾	†.06½	†.06¾	.07	.0725	.0725	.0725	†.06¾	†.06¼	†
endpoint	.07¼	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07¼	.07¼	.07¼	.07	.06¾	.0
hted average prices as reported by representative refiners. Sales to jobbers only. †No sales reported. Prices show general market.																
Texas:																
endpoint (U. S. Motor)	.05¾	.05¾	.05¾	.05¾	.05⅝	.05½	.05½	.05½	.05½	.06	.06⅛	.06	.05¾	.05½	.05¼	.0
endpoint	.06⅛	.06	.06	.06	.05⅞	.05⅞	.05⅞	.05¾	.06	.06¼	.06¼	.06¼	.06	.05¾	.05½	.0
endpoint	.06⅜	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06⅛	.06¼	.06⅜	.06⅜	.06⅜	.06¼	.06	.05⅝	.0
endpoint	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06⅜	.06½	.06⅝	.06⅝	.06½	.06⅜	.06⅛	.05¾	.0
Louisiana:																
endpoint (U. S. Motor)	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.07	.07	.07	.06¾	.06½	.0
lvania:																
htha	.07¼	.07¼	.07	.07	.07	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.0
oline	.08	.07¾	.07¾	.07½	.07¼	.07¼	.07¼	.07¼	.07	.07	.07	.06¾	.06¾	.06½	.06½	.0
e	.08	.08	.08	.07¾	.07½	.07½	.07½	.07½	.07¼	.07¼	.07¼	.07	.07	.06¾	.06¾	.0
e	.08½	.08½	.08½	.08¼	.08¼	.08	.08	.08	.08	.08	.08	.07¾	.07¾	.07½	.07½	.0
rnia:																
endpoint (U. S. Motor), domestic†	.05½	.07	.09½	.09½	.09½	.09½	.09	.09	.08½	.08	.09	.08	.08	.08½	.08½	.0
Coast (Export):																
S. Motor	.08	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07¼	.08	.08	.08	.07	.0
endpoint	.09	.09	.09	.09	.09	.09	.08	.08	.08	.08	.08	.09	.09	.09	.07½	.0
endpoint	.09¼	.09¼	.09¼	.09¼	.09¼	.09¼	.08½	.08½	.08½	.08½	.08½	.09¼	.09¼	.09¼	.07¾	.0
endpoint	.09½	.09½	.09½	.09½	.09½	.09½	.09	.09	.09	.09	.09	.09½	.09½	.09½	.08	
URAL GASOLINE—Oklahoma (Group 3):																
72-79.9, 375 e.p., rec. 90%	.04¼	.04¼	.04½	.04¾	.05	.05½	.05½	.05½	.05½	.05½	.05¾	.06	.06	.06	.05¾	.0
, 80-87.9, 375 e.p., rec. 90%	.04¼	.04	.04½	.04¾	.05	.05½	.05½	.05½	.05½	.05½	.05¾	.06	.06	.06	.05¾	.0
76-83.9, 375 e.p., rec. 85%	.04¼	.04	.04¼	.04½	.04¾	.05½	.05½	.05½	.05½	.05½	.05¾	.06	.06	.06	.05¾	.0
, 84-92, 375 e.p., rec. 85%	.04	.03¾	.04¼	.04½	.04¾	.05½	.05½	.05½	.05½	.05½	.05¾	.06	.06	.06	.05¾	.0
80-92, 375 e.p., rec. 78%	.04	.03¾	.04¼	.04½	.04¾	.05⅜	.05⅜	.05½	.05½	.05½	.05¾	.06	.06	.06	.05¾	.0
rnia:																
390 endpoint	.06¼	.06¼	.06½	.06½	.07½	.07½	.07¼	.07½	.07	.07	.07	.07	.07	.07	.07	.0
NING OIL—Oklahoma (Group 3):																
ter white Kerosene	.03¼	.03¼	.03¼	.03¼	.03⅛	.03	.03	.03	.03⅛	.03¼	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.0
ter white Kerosene	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03⅜	.0
Texas:																
ter white Kerosene	.03¼	.03⅛	.03⅛	.03⅛	.03	.03	.03	.03	.03	.03⅛	.03	.03	.03	.03	.03	.0
sylvania:																
ene, prime white	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04½	.04½	.04½	.04¾	.04¾	.04¾	.04¾	.0
ene, water white	.04⅝	.04⅝	.04½	.04½	.04¼	.04½	.04½	.04⅝	.05	.05	.05	.05¼	.05¼	.05	.05	.0
rnia:																
ter white Kerosene (high burning test)	.04	.04	.04	.04	.04	.04	.04½	.04½	.04¾	.04½	.04¾	.04¾	.04¾	.04¾	.04¾	.0
Coast (Export):																
me white	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.0
ter white	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.05	.05	.05	.0
L OIL—Oklahoma (Group 3):																
Fuel Oil, per bbl.	.47½	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.0
el Oil, per bbl.	.55	.55	.60	.60	.60	.60	.60	.60	.60	.60	.60	.65	.65	.65	.65	.0
s Oil (industrial)	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.0
aw Distillate	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.0
h Texas:																
Fuel Oil, per bbl.	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.35	
s Oil (industrial)	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02⅛	.02⅛	.02	.02	.02	.02	.0
aw Distillate	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.0
h Louisiana:																
el Oil, per bbl.	.70	.75	.75	.75	.75	.75	.75	.75	.75	.75	.80	.80	.80	.80	.80	
Coast (South Texas):																
	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.0
C Fuel (cargo lots), per bbl.	.80	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.65	
sylvania:																
el Oil	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.03	.03¼	.03¼	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.04	.04	
uel Oil	.02½	.03¼	.03¼	.03¼	.03¼	.03¼	.03½	.03¾	.04	.04	.04	.04	.04	.04	.04	
fornia:																
stillate	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.0
el Oil, Bunker (at tidewater)	.60	.60	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.65	.0
Diesel, per bbl.	.80	.80	.80	.80	.80	.80	.80	.80	.80	.80	.75	.80	.85	.85	.85	.0
RICATING OIL AND WAX—Oklahoma (Group 3):																
3 color, 20-25 cold test	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.0
3 color, 23-28 cold test	.09½	.09½	.09½	.09½	.09½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.0
5 color, 23-28 cold test	.08½	.08½	.08½	.08½	.08½	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.0
3 color, 23-28 cold test	.11	.11	.11	.11	.11	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.0
5 color, 25-30 cold test	.12½	.12½	.12½	.12½	.12½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.0
nder Stocks: 600, steam refined, light green	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.0
vis., D color, Bright Stock (10-25 C.T.)	.30	.30	.28	.28	.28	.25	.25	.25	.25	.25	.25	.23	.23	.23	.23	.0
es: 124-126 White Crude Scale Wax	.02	.02	.02	.02	.02	.02	.02	.02	.01¾	.02	.02	.02	.02	.02	.02	.0
sylvania: 200, 3 color	.20	.20	.19	.18½	.18½	.18½	.18½	.18½	.18	.18	.18	.18	.18	.17½	.17½	.0
m refined	.10	.10	.10½	.10½	.10½	.11	.11	.11	.11½	.11½	.11½	.11	.11	.11	.11	.0
nsylvania flash (below 35 C.T.)	.21	.21	.20	.19	.19	.18	.18	.18	.18	.18	.18	.17	.17	.17	.17	.0
vania Bright Stocks	.25	.25	.24	.24	.25	.25	.25	.25	.25	.25	.25	.25	.25	.23	.22	
Coast (South Texas):																
3 color, pale oil	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.08¼	.0
5-6 color, red oil	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.07¾	.0
fornia: 200 vis., 2½-3 color	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.10	.10	.10	.10	.10	.10	.10	.0
Neutral: 200 vis., 4½-5 color	.11	.11	.11	.11	.11	.11	.11	.11	.10	.10	.10	.10	.10	.10	.10	.0
W YORK (BAYONNE) REFINERY PRICES—																
, U. S. Motor, 58-60, 437 e.p.	.09	.08½	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07¾	.07¾	.07¾	.07¾	.0
e, water white, 41-43	.07	.07	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.0
, Bunker "C," 14-16*	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.05	1.05	1.05	1.05	
, Diesel, 28-30, per bbl.†	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
28 plus gravity	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.0
Paraffin Oil, tank car	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.0
Paraffin Oil, tank car	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.0
ned Wax: 120-122 a.m.p., per lb.	.02⅞	.02¾	.02⅞	.03	.03	.03	.03	.03	.03	.03	.03¼	.03⅛	.03⅛	.03⅛	.03	.0
olatum in bbls., in carload lots, per lb.: Amber	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.0
ghterage, 5 cents a barrel extra. †Lighterage 6.5 cents																
W YORK (BAYONNE) EXPORT PRICES—																
m refined Cylinder Stocks, in bbls.	.21	.18	.18	.18½	.18½	.18½	.17½	.17½	.17	.17	.17	.17	.17	.16½	.16½	
nsylvania flash	.33	.30	.29	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.26	
0-150 Bright Stocks	.35	.33	.32	.33	.33	.33	.32	.32	.32	.32	.32	.30	.30	.29	.29	
ANGELES EXPORT PRICES—																
, water white	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.04	.04¼	.04¼	.04½	.04½	.0
tor Gasoline, 53-55, 437 e.p.*	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06¾	.06¾	.06½	.06½	.06½	.0

coastwise and off-shore shipments.

Prices in All Fi[eld] ... Average ... Price[s]

ly Quotations of Representative Refined Product

PRICES GIVEN IN CENTS PER GALLON UNLESS OTHERWISE NOTED

June 27	June 3	June 10	June 17	June 24	July 1		July 8	July 15	July 22	July 29	August 5	August 12	August 19	August 26	September 2
						GASOLINE AND NAPHTHA—Oklahoma (Group 3):									
.06⅜	.06⅜	.06½	.06¼	.06¼	.06	50-52 450 endpoint	.05⅜	.05¾	.06	.06	.06	.06	.06	.06	.06
.06½	.06½	.06¼	.06¼	.06¼	.06	56-58 450 endpoint	.05⅜	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾	.05¾
.0729	.07375	.0725	.07	.06937	.06705	58-60 437 endpoint (U. S. Motor)*	.06676	.066	.065	.0651	.0642	.0646	.0643	.063	.0625
.07	.07625	†.07	.07¼	†.06¼	†.06¼	60-62 437 endpoint*	†.06¼	†.06	†.06	†.06	†.06	†.06	†.06	†.05⅜	†.06
.07¼	.0775	†.07¼	.07375	.07375	.07375	60-62 400 endpoint*	.0725	†.06¼	†.06⅜	.07125	.06932	.0694	.0712	.0688	.06875
.0812	†.07¼	.08	†.07	†.07	.08	64-66 375 endpoint*	.0775	†.06½	†.06⅝	†.06⅝	.0675	†.06¾	†.06¾	†.06½	†.06⅜
.07½	.07½	.07½	.07¼	.07¼	.07¼	68-70 360 endpoint	.07¼	.07	.07	.07	.07	.07	.07	.07	.07

*Weighted average prices as reported by representative refiners. Sales to jobbers only. †No sales reported. Prices show general market.

						North Texas:									
.06⅝	.06½	.06⅝	.06⅛	.06	.05⅞	58-60 437 endpoint (U. S. Motor)	.05⅜	.05¾	.05¾	.05¾	.05⅝	.05½	.05½	.05½	.05½
.06¾	.06¾	.06⅝	.06⅜	.06⅜	.06¼	60-62 400 endpoint	.06⅛	.06	.06	.06	.05⅞	.05⅝	.05⅞	.05¾	.06
.07	.06⅞	.06⅝	.06⅝	.06½	.06½	64-66 390 endpoint	.06⅜	.06¼	.06¼	.06¼	.06¼	.06¼	.06¼	.06⅛	.06¼
.07¼	.07¼	.07¼	.07	.06¾	.06¾	64-66 375 endpoint	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06⅜	.06½
						North Louisiana:									
.07¾	.07½	.07⅝	.07⅛	.07	.07	58-60 437 endpoint (U. S. Motor)	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾
						Pennsylvania:									
.07¾	.07¾	.07½	.07½	.07½	.07¼	52-54 Naphtha	.07¼	.07¼	.07	.07	.07	.07	.06⅝	.06⅝	.06¾
.08¼	.08¼	.08¼	.08¼	.08¼	.08	58-60 Gasoline	.08	.07¾	.07¾	.07½	.07¼	.07¼	.07¼	.07¼	.07
.08½	.08½	.08¼	.08¼	.08¼	.08¼	60 Gasoline	.08	.08	.08	.07¾	.07½	.07½	.07½	.07½	.07¼
.08⅝	.08⅝	.08⅝	.08½	.08½	.08½	64 Gasoline	.08½	.08½	.08½	.08¼	.08	.08	.08	.08	.08
						California:									
.07	.07	.07	.07	.07	.07	54-58 437 endpoint (U. S. Motor), domestic†	.05½	.07	.09½	.09½	.09½	.09½	.09	.09	.08½
						Gulf Coast (Export):									
.08	.08	.08	.08	.08	.08	58-60 U. S. Motor	.08	.08	.08	.08	.08	.08	.07	.07	.07
.09	.09	.09	.09	.09	.09	60-62 400 endpoint	.09	.09	.09	.09	.09	.09	.08	.08	.08
.09¼	.09¼	.09¼	.09¼	.09¼	.09¼	61-63 390 endpoint	.09¼	.09¼	.09¼	.09¼	.09¼	.09¼	.08½	.08½	.08½
.09½	.09½	.09½	.09½	.09½	.09½	64-66 375 endpoint	.09½	.09½	.09½	.09½	.09½	.09½	.09	.09	.09
						NATURAL GASOLINE—Oklahoma (Group 3):									
.06⅜	.06⅛	.06⅛	.06	.05½	.05¼	Grade A, 72-79.9, 375 e.p., rec. 90%	.04¼	.04¼	.04½	.04⅜	.05	.05½	.05½	.05½	.05½
.06⅜	.06	.06	.05⅞	.05¼	.05	Grade AA, 80-87.9, 375 e.p., rec. 90%	.04¼	.04	.04½	.04⅜	.05	.05½	.05½	.05½	.05½
.06	.05⅜	.05½	.05½	.05¼	.04½	Grade B, 76-83.9, 375 e.p., rec. 85%	.04¼	.04	.04¼	.04½	.04⅜	.05½	.05½	.05½	.05½
.06	.05⅜	.05¼	.05¼	.05¼	.04½	Grade BB, 84-92, 375 e.p., rec. 85%	.04	.03¾	.04¼	.04½	.04⅜	.05½	.05½	.05½	.05½
.05⅜	.05½	.05¼	.05¼	.05¼	.04½	Grade C, 80-92, 375 e.p., rec. 78%	.04	.03¾	.04¼	.04½	.04⅜	.05⅜	.05⅜	.05½	.05½
						California:									
.06⅜	.06⅜	.06⅜	.06⅜	.06⅜	.06⅜	75-78 375-390 endpoint	.06¼	.06¼	.06½	.06½	.07½	.07½	.07¼	.07½	.07
						BURNING OIL—Oklahoma (Group 3):									
.03⅞	.03⅞	.03⅜	.03⅜	.03⅜	.03⅝	41-43 water white Kerosene	.03¼	.03¼	.03¼	.03¼	.03⅛	.03	.03	.03	.03⅛
.04¼	.04¼	.04¼	.04¼	.04¼	.04	42-44 water white Kerosene	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½
						North Texas:									
.03⅜	.03⅜	.03⅝	.03½	.03½	.03½	41-43 water white Kerosene	.03¼	.03⅛	.03⅛	.03⅛	.03	.03	.03	.03	.03
						Pennsylvania:									
.05¼	.04⅜	.04⅜	.04⅜	.04⅝	.04⅝	43 Kerosene, prime white	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04½
.05½	.05½	.05	.05	.04¾	.04⅝	45 Kerosene, water white	.04⅝	.04⅝	.04½	.04½	.04¼	.04½	.04½	.04⅝	.05
						California:									
.04	.04	.04	.04	.04	.04	38-40 water white Kerosene (high burning test)	.04	.04	.04	.04	.04	.04	.04½	.04½	.04⅜
						Gulf Coast (Export):									
.06	.06	.06	.06	.06	.06	41-43 prime white	.06	.06	.06	.06	.06	.06	.06	.06	.06
.07	.07	.07	.07	.07	.07	41-43 water white	.07	.07	.07	.07	.07	.07	.07	.07	.07
						FUEL OIL—Oklahoma (Group 3):									
.52½	.50	.50	.47½	.47½		Below 18 Fuel Oil, per bbl.	.47½	.45	.45	.45	.45	.45	.45	.45	.45
.70	.70	.65	.60	.57½		24-26 Fuel Oil, per bbl.	.55	.55	.60	.60	.60	.60	.60	.60	.60
.02⅛	.02⅛	.02⅛	.02⅛	.02⅛		32-36 Gas Oil (industrial)	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛
.03	.03	.02⅞	.02⅞	.02⅞		38-40 Straw Distillate	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾
						North Texas:									
.50	.50	.45	.45	.45		Below 20 Fuel Oil, per bbl.	.40	.40	.40	.40	.40	.40	.40	.40	.40
.02⅛	.02⅛	.02	.02	.02		32-36 Gas Oil (industrial)	.02	.02	.02	.02	.02	.02	.02	.02	.02
.02¾	.02¾	.02¾	.02¾	.02¾		38-40 Straw Distillate	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾
.80	.75	.70	.70	.70		North Louisiana:									
						18-20 Fuel Oil, per bbl.	.70	.75	.75	.75	.75	.75	.75	.75	.75
						Gulf Coast (South Texas):									
.03¾	.03¾	.03¾	.03¾	.03¾		Gas Oil	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾
.80	.80	.80	.80	.80		Bunker C Fuel (cargo lots), per bbl.	.80	.75	.75	.75	.75	.75	.75	.75	.75
						Pennsylvania:									
.03⅞	.03⅞	.03½	.03½	.03½		30-34 Fuel Oil	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.03	.03¼	.03¼	.03⅜
.04	.04	.03¾	.03¾	.03¾		36-40 Fuel Oil	.03½	.03¼	.03¼	.03¼	.03¾	.03¼	.03½	.03¾	.04
						California:									
.01¾	.01¾	.01¾	.01¾	.01¾		26-32 Distillate	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾
.60	.60	.60	.60	.60		15-19 Fuel Oil, Bunker (at tidewater)	.60	.60	.65	.65	.65	.65	.65	.65	.65
.80	.80	.80	.80	.80		27 plus Diesel, per bbl.	.80	.80	.80	.80	.80	.80	.80	.80	.80
						LUBRICATING OIL AND WAX—Oklahoma (Group 3):									
.05½	.05½	.05½	.05½	.05½		100 vis., 3 color, 20-25 cold test	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½
.10	.10	.10	.09½	.09½		180 vis., 3 color, 23-28 cold test	.09½	.09½	.09½	.09½	.09½	.08½	.08½	.08½	.08½
.09	.09	.09	.08½	.08½		180 vis., 5 color, 23-28 cold test	.08½	.08½	.08½	.08½	.08½	.08	.08	.08	.08
.11½	.11½	.11½	.11	.11		200 vis., 3 color, 23-28 cold test	.11	.11	.11	.11	.11	.10	.10	.10	.10
.13½	.13½	.13½	.12½	.12½		240 vis., 5 color, 25-30 cold test	.12½	.12½	.12½	.12½	.12½	.11½	.11½	.11½	.11½
.09	.09	.10	.08	.08		Cylinder Stocks: 600, steam refined, light green	.08	.08	.08	.08	.08	.08	.08	.08	.08
.37	.37	.32	.32	.32		150-160 vis., D color, Bright Stock (10-25 C.T.)	.30	.30	.28	.28	.28	.25	.25	.25	.25
.02⅛	.02	.02	.02	.02		Waxes: 124-126 White Crude Scale Wax	.02	.02	.02	.02	.02	.02	.02	.02	.01¾
.25	.23½	.18½	.15½	.21		Pennsylvania: 200, 3 color	.20	.20	.19	.18½	.18½	.18½	.18½	.18½	.18
.20	.18	.15	.15	.12		600, steam refined	.10	.10	.10½	.10½	.10½	.11	.11	.11	.11
.29	.27	.25	.32	.32		600, Pennsylvania flash (below 35 C.T.)	.21	.21	.20	.19	.19	.18	.18	.18	.18
.38	.33	.31	.30	.26		Pennsylvania Bright Stocks	.25	.25	.24	.24	.25	.25	.25	.25	.25
						Gulf Coast (South Texas):									
.09½	.09½	.09½	.09½	.09½		200 vis., 3 color, pale oil	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½
.08¾	.08¾	.08¾	.08¾	.08¾		200 vis., 5-6 color, red oil	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.08¾
.11½	.11½	.11½	.11½	.11½		California: 200 vis., 2½-3 color	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.10
.11	.11	.11	.11	.11		Red Neutral: 200 vis., 4½-5 color	.11	.11	.11	.11	.11	.11	.11	.11	.10
						NEW YORK (BAYONNE) REFINERY PRICES—									
.09	.09	.09	.09	.09		Gasoline, U. S. Motor, 58-60, 437 e.p.	.09	.08½	.08	.08	.08	.08	.08	.08	.08
.07¼	.07	.07	.07	.07		Kerosene, water white, 41-43	.07	.07	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06
1.15	1.15	1.15	1.15	1.15		Fuel Oil, Bunker "C," 14-16*	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
2.00	2.00	2.00	2.00	2.00		Fuel Oil, Diesel, 28-30, per bbl.†	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
.04¾	.04¾	.04¾	.04¾	.04¾		Gas Oil, 28 plus gravity	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾
.07¼	.07¼	.07¼	.07¼	.07¼		28 pale Paraffin Oil, tank car	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼
.11½	.11½	.11½	.11½	.11½		750 red Paraffin Oil, tank car	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½
.03⅜	.03⅜	.03⅜	.02⅞	.02⅞		Refined Wax: 120-122 a.m.p., per lb.	.02⅞	.02¾	.02⅞	.03	.03	.03	.03	.03	.03
.03⅜	.03⅜	.03¼	.03¼	.03¼		Petrolatum in bbls., in carload lots, per lb.: Amber	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼

*Lighterage, 5 cents a barrel extra. †Lighterage 6.5 cents

						NEW YORK (BAYONNE) EXPORT PRICES—									
.29½	.27	.27	.25	.32		600, steam refined Cylinder Stocks, in bbls.	.21	.18	.18	.18½	.18½	.18½	.17½	.17½	.17
.38½	.37	.37	.35	.33		600, Pennsylvania flash	.33	.30	.29	.28	.28	.28	.28	.28	.28
.47	.45	.45	.41	.37		Light 140-150 Bright Stocks	.35	.33	.32	.33	.33	.33	.32	.32	.32
						LOS ANGELES EXPORT PRICES—									
.03¾	.03¾	.03¾	.03¾	.03¾		Kerosene, water white	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03
.06½	.06½	.06½	.06½	.06½		U. S. Motor Gasoline, 53-55, 437 e.p.*	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06

*For coastwise and off-shore shipments.

in Crude Oil Prices in All Fi[illegible] A[illegible]

ucts for Export and Domestic Movement

September					October				November				December				
2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30
.06	.06	.06	.06	.05⅞	.05⅞	.05½	.05¼	.05	.05	.05	.04¾	.04½	.04¼	.04¼	.04¼	.04¼	.04¼
.05⅞	.05⅞	.06	.06	.05⅞	.05¾	.05¼	.05	.04⅞	.04⅝	.04⅞	.04⅞	.04½	.04¼	.04	.04	.04	.04
.0625	.0624	.0633	.0634	.0627	.0629	.0619	.0608	.0560	.0563	.0530	.0515	.0513	.0498	.0488	†.04	.045	†.04
†.06	†.06	†.06¼	†.06⅛	†.06¼	†.06¼	†.05¾	†.05½	†.05¼	†.05¼	†.05¼	†.05¼	†.04⅜	†.04⅜	†.04¾	†.04¼	†.04¼	†.04⅛
.06875	.0681	.0688	.0688	.0681	.0681	.0663	.0663	.0631	.0625	.06	.0525	.055	†.05¼	†.05¼	.055	†.04¼	†.04¼
†.06⅜	.07	.0725	.0725	.0725	†.06¾	†.06¼	†.06¼	.0688	†.06	.0675	†.05½	†.05¼	.065	.065	†.04¾	†.04¾	†.04⅝
.07	.07	.07¼	.07¼	.07¼	.07	.06⅜	.06½	.05¾	.05¾	.05¾	.05¾	.05⅜	.05½	.05½	.05¼	.05¼	.05
.05½	.06	.06⅛	.06	.05⅜	.05½	.05¼	.05¼	.05	.04⅞	.04⅞	.04¾	.04½	.04¼	.04	.04	.04	.04
.06	.06¼	.06¼	.06¼	.06	.05⅜	.05½	.05½	.05¼	.05¼	.05¼	.05¼	.04⅞	.04⅜	.04¼	.04⅜	.04¼	.04¼
.06¼	.06⅜	.06⅜	.06⅜	.06¼	.06	.05⅝	.05⅝	.05½	.05⅜	.05⅜	.05¼	.04⅞	.04¾	.04⅝	.04⅝	.04½	.04½
.06½	.06⅝	.06⅝	.06½	.06⅜	.06⅛	.05¾	.05¾	.05¾	.05½	.05½	.05½	.05¼	.05⅛	.04¾	.04¾	.04¾	.04¾
.06¾	.06¾	.07	.07	.07	.06¾	.06½	.06½	.06¼	.06¼	.06¼	.06¼	.06¼	.05¾	.05¼	.05	.05	.04¾
.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06½	.06¼	.06¼	.06¼	.06
.07	.07	.07	.06¾	.06¾	.06½	.06½	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06½	.06½	.06½	.06½	.06¼
.07¼	.07¼	.07¼	.07	.07	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06½	.06½
.08	.08	.08	.07¾	.07¾	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07¼	.07¼	.07¼	.07	.07
.08½	.08	.09	.08	.08	.08½	.08½	.08½	.08½	.08	.08	.08	.08	.07½	.07½	.06½	.06½	.06½
.07	.07	.07¼	.08	.08	.08	.07	.07	.07	.07	.06	.05¾	.05½	.05½	.05¼	.05⅛	.05⅛	.05⅛
.08	.08	.08	.09	.09	.09	.07½	.07½	.07½	.07½	.06¼	.06¼	.06	.06	.05¾	.05½	.05½	.05½
.08½	.08½	.08½	.09¼	.09¼	.09¼	.07¾	.07¾	.07¾	.07¾	.06½	.06½	.06¼	.06¼	.06	.05¾	.05¾	.05¾
.09	.09	.09	.09½	.09½	.09½	.08	.08	.08	.08	.06⅞	.06¾	.06⅝	.06½	.06¼	.06	.06	.06
.05½	.05½	.05⅜	.06	.06	.06	.05⅜	.05¼	.04¾	.04½	.04½	.04⅝	.04⅝	.04¼	.04	.03¾	.03½	.03¼
.05½	.05½	.05⅜	.06	.06	.06	.05⅜	.05¼	.04¾	.04½	.04½	.04½	.04⅜	.04	.037⅛	.03¼	.03¼	.03
.05½	.05½	.05⅜	.06	.06	.06	.05⅜	.05¼	.04¾	.04½	.04½	.04½	.04	.03¾	.03⅝	.03¼	.03	.02¾
.05½	.05½	.05⅜	.06	.06	.06	.05⅜	.05¼	.04¾	.04½	.04½	.04⅜	.04	.03¾	.03⅝	.03	.03	.02¾
.05½	.05½	.05⅜	.06	.06	.06	.05⅜	.05¼	.04¾	.04½	.04½	.04⅜	.04	.03¾	.03½	.03	.03	.02¾
.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06¾	.06¼	.06	.05¾	.05¾	.05¾
.03⅛	.03¼	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03	.03	.03
.03½	.03½	.03½	.03½	.03½	.03½	.03⅜	.03¼	.03⅛	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼
.03	.03⅛	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
.04½	.04½	.04½	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04⅞	.04⅞	.04⅞	.05	.05	.05
.05	.05	.05	.05¼	.05¼	.05	.05	.05	.05	.04⅞	.04⅞	.04⅞	.05	.05	.05	.05¼	.05⅛	.05⅛
.04¾	.04½	.04¾	.04¾	.04¾	.04¾	.04¾	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
.06	.06	.06	.06	.06	.06	.06	.06	.06	.05	.04½	.04½	.04½	.04½	.04	.04¼	.04¼	.04¼
.07	.07	.07	.07	.05	.05	.05	.05	.05	.06	.05½	.05½	.05½	.05½	.05	.05¼	.05¼	.05¼
.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.40	.40	.40	.40	.40	.40	.40
.60	.60	.60	.65	.65	.65	.65	.65	.65	.65	.65	.65	.06	.65	.65	.65	.65	.65
.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02⅛	.02	.02	.02	.02	.02
.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾
.40	.40	.40	.40	.40	.40	.35	.35	.40	.40	.40	.40	.40	.40	.35	.35	.35	.30
.02	.02	.02⅛	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02¾	.02	.02	.02	.02
.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾	.02¾
.75	.75	.80	.80	.80	.80	.80	.80	.80	.75	.75	.80	.80	.80	.75	.75	.75	.75
.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03½	.03½	.03½	.03½	.03½
.75	.75	.75	.75	.75	.75	.65	.65	.62½	.62½	.65	.65	.65	.67½	.67½	.67½	.67½	.67½
.03⅝	.03⅝	.02⅝	.03⅝	.03⅝	.04	.04	.04	.03¾	.03⅞	.03¾	.03¾	.03¾	.03½	.03½	.03½	.03¼	.03¼
.04	.04	.04	.04	.04	.04	.04	.04	.037⅛	.037⅛	.03¾	.03¾	.03¾	.03½	.03½	.03½	.03½	.03½
.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾	.01¾
.65	.65	.65	.65	.65	.65	.65	.65	.65	.60	.60	.60	.60	.60	.55	.55	.55	.55
.80	.80	.75	.80	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85
.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05¾	.05¾	.05¾	.05¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾
.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½
.08	.08	.08	.08	.08	.08	.08	.07¾	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼
.10	.10	.10	.10	.10	.10	.10	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾	.09¾
.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼	.11¼
.08	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07	.07	.07
.25	.25	.25	.25	.23	.23	.23	.22	.22	.21	.20	.19	.19	.18	.18	.18	.18	.18
.01¾	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.18	.18	.18	.18	.18	.17½	.17½	.17½	.17	.17	.17	.17	.17	.16½	.16½	.16½	.16½	.16½
.11½	.11½	.11½	.11	.11	.11	.11	.11	.11	.10½	.09¾	.09½	.09½	.09½	.09½	.09	.09	.09
.18	.18	.18	.17	.17	.17	.17	.17	.17	.16	.16	.15½	.15½	.15½	.15½	.15	.14½	.14½
.25	.25	.25	.25	.25	.23	.22	.22	.22	.22	.21	.21	.21	.21	.20	.20	.20	.19
.09½	.09½	.09½	.09½	.09½	.09½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08¼	.08¼	.08¼	.08¼
.08¾	.08¾	.08¾	.08¾	.08¾	.08¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07¾	.07½	.07½	.07½	.07½
.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.09½	.09½	.09½
.08	.08	.08	.07¾	.07¾	.07¾	.07¾	.07¾	.07½	.07½	.06¾	.06¾	.06¾	.06¼	.06¼	.06¼	.06¼	.06¼
.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¾	.06¼	.06	.06¼	.06¼	.06	.06	.06
1.15	1.15	1.15	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.85	1.85	1.85
.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¼	.04¼	.04¼
.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼
.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½
.03	.03	.03	.03⅛	.03⅛	.03⅛	.03	.03	.02⅞	.02⅞	.02⅞	.02⅞	.02⅞	.02⅞	.03	.03	.03	.03
.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼
.17	.17	.17	.17	.17	.17	.16½	.16½	.17	.17	.17	.17	.17	.16½	.16½	.16½	.16½	.16½
.28	.28	.28	.28	.28	.28	.28	.26	.26	.25	.25	.24	.24	.23½	.23½	.23½	.23½	.23½
.32	.32	.32	.32	.30	.30	.29	.29	.29	.29	.29	.29	.29	.27	.26	.26	.26	.26
.03¾	.03¾	.03¾	.04	.04¼	.04½	.04½	.04½	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾	.04¾
.06½	.06½	.06½	.06¾	.06¾	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06¼	.05	.04¾	.04¾

Table for 1930 Showing Date and Amount

(PRICES GIVEN IN

ULF COAST

SORRENTO—January 1, $1.25; $1; April 10, $1.10. Posted by Gulf of Louisiana.

—January 1, $1; January 15, 85 10, 95 cents. Posted by Gulf Pipe

nuary 1, $1; January 15, 75 cents; ents. Posted by The Texas Company. ary 1, 70 cents; January 17, 50 ary 20, 55 cents. Posted by Gulf ine Co. On April 1, Humble Oil & made first posting as follows: Re- crude (below 25 gravity), 75 cents; crude (25 gravity and above), Grade t gravity scale. Humble prices were y Gulf Coast Pipe Line Co. On April heavy crude advanced to 85 cents. On Humble posted 92 cents for Refugio 5.9 degrees with a 2-cent differential ree upward to 40 degrees and above

	Jan. 1	Jan. 15	Apr. 10	Oct. 28
....	1.30	1.05	1.10	1.00
....	....	....	....	....
LIGHT*—				
....	1.15	.90	1.00	.75
....	1.18	.93	1.03	.92
....	1.21	.96	1.06	.94
....	1.24	.99	1.09	.96
....	1.27	1.02	1.12	.98
....	1.30	1.05	1.15	1.00
....	1.33	1.08	1.18	1.02
....	1.36	1.11	1.21	1.04
....	1.39	1.14	1.24	1.06
....	1.42	1.17	1.27	1.08
....	1.45	1.20	1.30	1.10
e†	1.48	1.23	....	....
....	1.49	1.23	1.33	1.12
....	1.53	1.26	1.36	1.14
....	1.57	1.29	1.39	1.16
....	1.61	1.32	1.42	1.18
....	1.65	1.34	1.44	1.20
....	1.69	1.36	1.46	1.22
....	1.73	1.38	1.48	....
....	1.77	1.40	1.50	....
....	1.81	1.42	1.52	....
e	1.85	1.44	1.54	....

Pipe Line Co. makes separate classde B and Gulf Coast light, posting price same as posting at below 25 ast light oil. All other purchasers e classification of "Gulf Coast light" y scale to Grade B. Until April 1, l & Refining Co. and Gulf Pipe Line e ended at "35 gravity and above." , Humble, followed by Gulf, extended scale to "44 gravity and above," postns the Texas Pipe Line Co.'s Gulf

l & Refining Co., Gulf Pipe Line Co. ipe Line Co. only to April 1 when ended.

28, Humble posted 75 cents for Grade es, and 25-25.9 degrees, at 92 cents fferential for each degree upward to bove at $1.22. On October 30, Gulf Louisiana and Gulf Pipe Line Co. of follows for Grade B: Below 25 de25-25.9 degrees, 71 cents, with a 2or each degree upward to and includd above at $1.01. The Texas Comve schedule November 1.

ADIAN FIELDS

n.	Feb. 15	Apr. 11	June 26	July 7	Oct. 28
27	2.12	2.17	2.02	....	1.57
20	2.15	2.10	1.95	....	1.50
..	....	....	....	3.69	....
..	....	....	....	3.45	....

ial Oil Co., Ltd. Imperial Refining ulee, Alberta, at $1.55, October 28.

MIDDLE WESTERN STATES

OHIO OIL CO.

	Jan. 1	Feb. 15	Apr. 11	June 26	Oct. 28
Lima	1.80	1.65	1.70	1.55	1.10
Wooster	1.90	1.75	1.80	1.70	1.35
Illinois	1.75	1.60	1.65	....	1.30
Indiana	1.57	1.42	1.47	1.32	.87
Princeton	1.75	1.60	1.65	....	1.30
Plymouth	1.28	1.18	1.23	....	.88
Western Kentucky	1.68	1.50	1.55	....	1.15
Michigan—					
Dundee*	....	....	....	....	....
Upper and lower Traverse sands*	....	....	....	....	....
Midland†	1.50	....	....	....	1.10
Saginaw (Saginaw sand)‡	1.89	....	....	....	....
Saginaw (Berea sand)‡	1.79	....	....	....	....
Cumberland, Clay, Barren, Clinton, Monroe Counties (Ky.)§	1.50	....	....	....	....
Oil City (Ky)¶	1.70	....	....	....	....

*Posted by Standard of Indiana for boat shipment, same as Mid-Continent gravity scale. †Posted by Pure Oil Co.; February 6, $1.25; June 5, $1.55; July 19, $1.45; August 21, $1.30. ‡Posted by Sun Oil Co. §Posted by Paragon Development Co. ¶Posted by Stoll Oil Refining Co.; January 20, $1.55; February 17, $1.45; July 30, $1.35. On October 28, Standard Oil Co. (Indiana) cut Muskegon, Mich., crude to Mid-Continent price scale of Stanolind Crude Purchasing Co.

ARKANSAS—NORTH LOUISIANA

Caddo, Bull Bayou, Pleasant Hill, Zwolle, Holly, Crichton, DeSoto, Haynesville, Homer (La.), and El Dorado, Ark.—

	Jan. 1	Jan. 15*	Apr. 10†	Oct. 30
Below 25	....	....	.72	....
25 to 25.9	....	....	.77	....
26 to 26.9	....	....	.82	....
27 to 27.9	....	....	.87	....
Below 28 g	1.00	.78	....	....
28 to 28.9	1.05	.84	.92	.65
29 to 29.9	1.10	.90	.97	.69
30 to 30.9	1.15	.96	1.02	.73
31 to 31.9	1.20	1.02	1.07	.77
32 to 32.9	1.25	1.08	1.12	.81
33 to 33.9	1.30	1.11	1.17	.85
34 to 34.9	1.35	1.14	1.22	.89
35 to 35.9	1.40	1.17	1.25½	.92
36 to 36.9	1.45	1.20	1.29	.95
37 to 37.9	1.50	1.23	1.32½	.98
38 to 38.9	1.55	1.26	1.36	1.01
39 to 39.9	1.60	1.29	1.39½	1.04
40 to 40.9	1.65	1.32	1.43	1.07
41 to 41.9	1.70	1.35	1.46½	....
42 to 42.9	1.75	1.38	1.50	....
43 to 43.9	1.80	1.41	1.53½	....
44 and above	1.85	1.44	1.57	....

Major companies posting are:

Magnolia Petroleum Co., Pine Island (Caddo), Haynesville, Bull Bayou and El Dorado.

Standard Oil Co. of Louisiana and Gulf Refining Co., all fields.

Atlantic Oil Producing Co., Homer, Haynesville and West El Dorado.

The Texas Company, Caddo, Bull Bayou and Crichton.

Louisiana Oil Refining Corp., all fields.

*Posted by Texas Pipe Line Co., January 15. Other companies, January 16. †Posted by Texas Pipe Line Co., April 10; other companies, April 11. Schedule of Magnolia Petroleum Co. starts at below 28 gravity, 87 cents.

STEPHENS—	Jan. 1	Apr. 1 1	Oct. 30
Below 28	.90	.70	....
28 to 28.9	.94	.81	.54
29 to 29.9	.98	.86	.58
30 to 30.9	1.02	.91	.62
31 to 31.9	1.06	.96	.66
32 and above	1.10	1.01	.70

Posted by Atlantic Oil Refining Corp. and Louisiana Oil Refining Corp.

SMACKOVER—	Jan. 1	Apr. 11	Oct. 30
Below 24 gravity	.85	.90	.70
Above 24 gravity	1.00	1.05	.70

Posted by Standard Oil Co., The Texas Company, Gulf Refining Co., Atlantic Oil Producing Co., Louisiana Oil Refining Corp. and Magnolia Petroleum Co.

Cotton Valley (below 36) and	Jan. 1	Jan. 17	Apr. 11	Oct. 30
Sarepta-Carterville*	.85	.80	.85	....
Bellevue	1.30	1.05	1.15	1.00
Urania	1.10	....	.95	.75
East El Dorado	.85	....	.90	.70

Cotton Valley—Standard Oil Co. of Louisiana, Magnolia Petroleum Co. and Louisiana Oil Refining Corp.

Bellevue—Standard Oil Co. of Louisiana, Gulf Refining Co. and Louisiana Oil Refining Corp.

Calion (East El Dorado)—Gulf Refining Co.

*Standard of Louisiana posted Cotton Valley and Sarepta-Carterville crude 36 gravity and above on regular Mid-Continent crude price schedule. On October 30 new schedule posted for North Louisiana-Arkansas which includes Cotton Valley and Sarepta-Carterville.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

DARST CREEK—Posted January 15, $1.05, by Humble Oil & Refining Co., Texas Pipe Line Co. and Magnolia Petroleum Co.; April 10, $1.15. October 28, Humble posted 90 cents.

SALT FLAT—January 1, $1.25; January 15, $1.05; April 10, $1.15; posted by Humble Oil & Refining Co., The Texas Pipe Line Co. and Magnolia Petroleum Co.

THRALL—Effective March 16, 1926, Magnolia Petroleum Co. posted same price as corresponding grade Mid-Continent crude less 19½ cents freight per cwt.

LYTTON SPRINGS—Posted by the Magnolia Petroleum Co. and Humble Pipe Line Co. under the Mid-Continent gravity schedule.

ROCKDALE-MINERVA—	Jan. 1
Up to 37.9 gravity	1.25
38 to 38.9 gravity	1.27
39 to 39.9 gravity	1.29
40 gravity and above	1.31

SOMERSET—	Jan.1	Oct. 28
28 to 28.9 gravity	1.05	.65
29 to 29.9 gravity	1.05	.69
30 to 30.9 gravity	1.05	.73
31 to 31.9 gravity	1.05	.77
32 to 32.9 gravity	1.05	.81
33 to 33.9 gravity	1.07	.85
34 to 34.9 gravity	1.09	.89
35 to 35.9 gravity	1.11	.92
36 to 36.9 gravity	1.13	.95
37 to 37.9 gravity	1.15	.98
38 gravity and above	1.17	1.01

	Jan. 1	Jan. 15	Jan. 16	Apr. 10	Aug. 21	Oct. 28
LULING	.90	....	.75	.85	....	.75
CALLIHAM	1.75	....	....	....	....	....
MIRANDO	.90	.75	.70	.85	....	.75
CORSICANA heavy	.80	....	....	....	....	.75
SALT FLAT	1.25	1.05	....	1.15	....	.90
PETTUS	....	....	....	1.40	1.15	1.10

Note—Luling and Corsicana heavy posted by the Magnolia Petroleum Co. and Grayburg Pipe Line Co. Rockdale-Minerva by Kent-Middleton Refining Co. Calliham (Live Oak and McMullen Counties) by Dependable Oil Co. Mirando (Webb, Jim Hogg and Zapata Counties) by Texpata Pipe Line Co., Magnolia Pipe Line Co., Humble Oil & Refining Co. and Crown Central Pipe Line Co. Somerset posted by Grayburg Pipe Line Co., Pioneer Oil Refining Co. and Witherspoon Refining Co.

TEXAS PANHANDLE

GRAY COUNTY—	Jan. 1	Jan. 15*	Apr. 10	O
Below 27	.90	....	....	
27 to 27.9	.90	.69	....	
28 to 28.9	.90	.69	.75½	
29 to 29.9	.95	.75	.80½	
30 to 30.9	1.00	.81	.85½	
31 to 31.9	1.05	.87	.90½	
32 to 32.9	1.10	.93	.95½	
33 to 33.9	1.15	.96	1.00½	
34 to 34.9	1.20	.99	1.05½	
35 to 35.9	1.25	1.02	1.09	
36 to 36.9	1.30	1.05	1.12½	
37 to 37.9	1.35	1.08	1.16	
38 to 38.9	1.40	1.11	1.19½	
39 to 39.9	1.45	1.14	1.23	
40 to 40.9	1.50	1.17	1.26½	
41 to 41.9	1.55	1.20	1.30	
42 to 42.9	1.60	1.23	1.33½	
43 to 43.9	1.65	1.26	1.37	
44 and above	1.70	1.29	1.40½	

*Humble Oil & Refining Co., January 15; nolia Petroleum Co., January 16.

The October 28 cut by Humble Oil & Refinin was met on the same day by Magnolia Petroleu and Prairie Oil & Gas Co.

CARSON AND HUTCHINSON COUNTIES—	Jan. 1	Jan. 15*	Apr. 10	Oc
Below 31	.90	.72	....	
31 to 31.9	.90	.72	.77½	
32 to 32.9	.95	.78	.82½	
33 to 33.9	1.00	.81	.87½	
34 to 34.9	1.05	.84	.92½	
35 to 35.9	1.10	.87	.96	
36 to 36.9	1.15	.90	.99½	
37 to 37.9	1.20	.93	1.03	
38 to 38.9	1.25	.96	1.06½	
39 to 39.9	1.30	.99	1.10	
40 to 40.9	1.35	1.02	1.13½	
41 to 41.9	1.40	1.05	1.17	
42 to 42.9	1.45	1.08	1.20½	
43 to 43.9	1.50	1.11	1.24	
44 and above	1.55	1.14	1.27½	

*Humble Oil & Refining Co., January 15; nolia Petroleum Co., January 16.

On October 28, Humble Oil & Refining Co Carson and Hutchinson Counties, posted below degrees, 45 cents, and 29-29.9 degrees, 49 cents. nolia Petroleum Co. and Prairie Oil & Gas Co. this reduction on the same day. Prairie ceased pos and purchasing in all Panhandle fields November

WHEELER COUNTY—	Jan. 1	Jan. 15*	Apr. 11	Oct.
Below 29	.90	.70	....	
29 to 29.9	.90	.70	.75½	
30 to 30.9	.95	.76	.80½	
31 to 31.9	1.00	.82	.85½	
32 to 32.9	1.05	.88	.90½	
33 to 33.9	1.10	.91	.95½	
34 to 34.9	1.15	.94	1.00½	
35 to 35.9	1.20	.97	1.04	
36 to 36.9	1.25	1.00	1.07½	
37 to 37.9	1.30	1.03	1.11	
38 to 38.9	1.35	1.06	1.14½	
39 to 39.9	1.40	1.09	1.18	
40 to 40.9	1.45	1.12	1.21½	
41 to 41.9	1.50	1.15	1.25	
42 to 42.9	1.55	1.18	1.28	
43 to 43.9	1.60	1.21	1.32	
44 and above	1.65	1.24	1.35½	

*Humble Oil & Refining Co., January 15; nolia Petroleum Co., January 16.

†Wheeler County—Companies quit posting April 10, but crude takes present Hutchinson-Ca prices.

	Ja
CHALK	

Posted by Magnolia Petroleum Co.

Note—In Noel-McConnell district, Prairie Oi Gas Co. posted, April 10, below 30 degrees, 75½ ce with a 5-cent differential upward to 34-34.9 degr $1.00½, and then a 3-cent differential upward to degrees and above at $1.35½.

EASTERN STATES

	Jan. 1	Feb. 5	Feb. 17	Apr. 11	May 1	May 2	May 16	June 2	June 17	July 11	July 19	Aug. 1	Aug. 22	Sept. 14	Oct. 22	Oct. 28	Nov. 1	Nov. 1
ade oil in New York Transit Lines (N. Y.)*	3.05	3.00	2.75	....	2.50	....	....	....	....	2.35	....	....	....	....	....	....	....	....
National Transit Lines (Pa.)*†	3.05	3.00	2.75	....	2.50	....	....	....	....	2.35	....	....	....	....	....	....	....	....
ade oil in National Transit Lines (Pa.)	3.05	....	2.80	....	2.55	....	2.30	....	2.20	2.05	....	....	2.20	....	2.15	....	2.00	1.8
ade oil in South West Pennsylvania Line (W. Va.)	3.00	....	2.75	....	2.50	....	2.25	....	2.15	2.00	....	....	2.25	....	2.10	....	1.95	1.8
ade oil in Eureka Lines (Pa.)	2.90	....	2.65	....	2.40	....	2.15	....	2.05	1.90	....	....	2.15	....	2.00	....	1.85	1.7
ade oil in Buckeye Lines (Ohio)	2.70	....	2.45	....	2.20	....	1.95	....	1.90	1.75	....	....	....	1.60	....	....	....	....
in Buckeye Lines (Ohio) 25-cent grade	1.80	....	1.65	....	....	1.75	....	....	....	....	1.50	....	....	....	....	1.30	....	....
il in Eureka Pipe Line Co. lines	....	....	....	1.31	....	....	....	....	....	....	....	1.14	....	....	....	....	....	....
berland Lines (Ky.)	1.55	....	1.37	1.47	....	....	....	....	....	....	....	....	....	....	....	....	....	....
l in Cumberland Lines (Ky)	.60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.10	....	....
Cumberland Pipe Lines	1.42	....	1.24	1.34	....	....	....	....	....	....	....	....	....	....	....	1.17	....	....
(Tide Water Pipe Line Co.)	....	....	....	....	....	....	2.50	2.40	2.25	2.10	....	....	2.50	....	2.40	....	2.30	2.1
(Tide Water Pipe Line Co.)	....	....	....	....	....	....	2.50	2.40	2.25	2.10	....	....	2.50	....	2.40	....	2.30	2.1

seph Seep Purchasing Agency.

Purchasing Agency withdrew from Bradford and Allegany Fields as a purchaser on May 16. Prices shown after that date posted by Tide Water Pipe Line Co.

ransit Lines withdrew from Bradford May 16. On November 12, Pure Oil Co. posted $1.70 for Cabin Creek, Kelly Creek, and Bradford Hollow, W. Va.

nt of Changes in Crude Oil Prices in All Fiel

(VEN IN DOLLARS PER BARREL)

NDLE

Apr. 10	Oct. 28
....	....
....	....
.75½	.50
.80½	.54
.85½	.58
.90½	.62
.95½	.66
1.00½	.70
1.05½	.74
1.09	.77
1.12½	.80
1.16	.83
1.19½	.86
1.23	.89
1.26½	.92
1.30	.92
1.33½	.92
1.37	.92
1.40½	.92

nuary 15; Mag-

l & Refining Co.
a Pefroleum Co.

NTIES—

Apr. 10	Oct. 28
....	.53
.77½	.57
.82½	.61
.87½	.65
.92½	.69
.96	.72
.99½	.75
1.03	.78
1.06½	.81
1.10	.84
1.13½	.87
1.17	.87
1.20½	.87
1.24	.87
1.27½	.87

nuary 15; Mag-

Refining Co., in
osted below 29
, 49 cents. Mag-
& Gas Co. met
ie ceased posting
ls November 27.

Apr. 11	Oct. 28†
....	.45
.75½	.49
.80½	.53
.85½	.57
.90½	.61
.95½	.65
1.00½	.69
1.04	.72
1.07½	.75
1.11	.78
1.14½	.81
1.18	.84
1.21½	.87
1.25	.87
1.28	.87
1.32	.87
1.35½	.87

nuary 15; Mag-

quit posting on
utchinson-Carson

Jan. 1
.65

'o.
et, Prairie Oil &
grees, 75½ cents.
34-34.9 degrees,
al upward to 44

Nov. 1	Nov.12
....	....
....	....
2.00	1.85
1.95	1.80
1.85	1.70
....	....
....	....
....	....
....	....
....	....
....	....
2.30	2.15
2.30	2.15

WEST TEXAS

HOWARD AND GLASSCOCK COS.:

Gravity—	Jan.1	Jan.15*	Apr.10	Oct.28
Below 25	.70	.55	.65	.50
25 to 25.9	.74	.58	.68	.52
26 to 26.9	.78	.61	.71	.54
27 to 27.9	.82	.64	.74	.56
28 to 28.9	.84	.66	.76	.58
29 to 29.9	.86	.68	.78	.60
30 to 30.9	.88	.70	.80	.62
31 to 31.9	.90	.72	.82	.64
32 to 32.9	.92	.74	.84	.66
33 to 33.9	.94	.76	.86	.68
34 to 34.9	.96	.78	.88	.70
35 to 35.9	.98	.80	.90	.72
36 to 36.9	1.00	.82	.92	.74

*Posted by Humble Oil & Refining Co., January 15. Magnolia Petroleum Co posted Howard-Glasscock crude same schedule as West Texas, January 16.

	Jan.1	Apr.10
CHALK	.65	.75

CRANE, UPTON, PECOS, CROCKETT, WINKLER,* MITCHELL, TEXAS, AND LEA, NEW MEXICO:

Gravity—	Jan.1	Jan.15†	Apr.10	Oct.28
Below 25	.70	.55	.65	.50
25 to 25.9	.74	.58	.68	.52
26 to 26.9	.78	.61	.71	.54
27 to 27.9	.82	.64	.74	.56
28 to 28.9	.86	.67	.77	.58
29 to 29.9	.90	.70	.80	.60
30 to 30.9	.94	.73	.83	.62
31 to 31.9	.98	.76	.86	.64
32 to 32.9	1.02	.79	.89	.66
33 to 33.9	1.06	.82	.92	.68
34 to 34.9	1.10	.85	.95	.70
35 to 35.9	1.14	.88	.98	.72
36 and above	1.18	.91	1.01	.74

Posted by Humble Oil & Refining Co., Kay County Gas Co., Gulf Refining Co. and Magnolia Petroleum Co.

*Humble Oil & Refining Co., on October 28, for Winkler and Pecos Counties, posted below 25 degrees, 55 cents, with a 2-cent differential for each degree upward to 36 degrees and above at 79 cents.

†Humble Oil & Refining Co., January 15; Magnolia Petroleum Co., January 16.

ROCKY MOUNTAIN FIELDS

	Jan. 1	Feb. 15	Apr. 11	July 27	Oct. 28	Nov. 1
SALT CREEK—						
29 to 29.9 gravity	1.10	.90	1.00	....	....	....
30 to 30.9 gravity	1.15	.96	1.05	....	....	....
31 to 31.9 gravity	1.20	1.02	1.10	....	....	....
32 to 32.9 gravity	1.25	1.08	1.15	....	....	....
33 to 33.9 gravity	1.30	1.11	1.18½	....	....	....
34 to 34.9 gravity	1.35	1.14	1.22	....	....	....
35 to 35.9 gravity	1.40	1.17	1.25½	....	....	....
36 to 36.9 gravity	1.45	1.20	1.29	....	....	....
37 gravity and above	1.50	1.23	1.32½	....	....	....
ROCK CREEK (Wyo.)	1.40	1.25	1.35	....	1.01	....
BIG MUDDY	1.43	1.33	1.38	....	1.04	....
MULE CREEK	1.20	....	....	....	1.20	....
GRASS CREEK, LIGHT	1.65	1.45	1.55	....	1.25	....
GRASS CREEK, HEAVY	.90	....	....	.90	....	....
FOUR BEAR	.85	....	....	....	....	....
ELK BASIN	1.65	1.45	1.55	....	1.25	....
LANCE CREEK	1.68	1.53	1.63	....	1.33	....
POISON SPIDER	1.00	....	....	....	....	....
NOTCHES	.65	....	....	....	....	....
REX LAKE	1.10	....	....	....	....	....
OSAGE	1.65	1.53	1.63	....	1.00	.85
LOST SOLDIER	1.05	....	1.00	....	....	....
GREYBULL-TORCHLIGHT	1.65	1.45	1.55	....	1.35	....
HAMILTON DOME	.85	....	....	....	....	....
CAT CREEK (Mont.)	1.48	1.45	1.55	....	1.25	....
SUNBURST	1.75	1.65	....	....	1.55	....
ARTESIA (N. Mex.)	1.08	1.00	1.05	....	.75	....
HOGBACK	1.70	1.40	....	....	....	....
PEDRO	1.25	1.00	1.05	....	....	....
ILES—						
33 gravity and above	.99	.87	....	....	....	....
Below 33 gravity	.87	.65	....	....	....	....
PONDERA (Mont.)*	....	....	....	....	1.45	....
LEE COUNTY (see gravity table)	....	....	....	....	....	....

Note—Rock Creek, Big Muddy, Mule Creek Grass Creek, light and heavy,' Elk Basin, Lance Creek, Rex Lake, Sunburst and Artesia posted by Ohio Oil Co.; all others and Grass Creek light posted by Midwest Refining Co.

*Pondera crude oil, $1.80 on February 1 and $1.55 on April 10.
Imperial Refining Co. posted Border, Mont., at $1.55, October 28.

MEXICAN CRUDES

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
PANUCO HEAVY, f.o.b. Tampico	.65	.65	.67	.67	.60	.60	.55	.55	.55	.56	.56	.56

Note—Prices based on transactions for previus month.

OKLAHOMA, KANSAS, NO CENTRAL TE

	Jan. 1
Below 25 gravity	.85
25 to 25.9 gravity	....
26 to 26.9 gravity	.95
27 to 27.9 gravity	1.00
28 to 28.9 gravity	1.05
29 to 29.9 gravity	....
30 to 30.9 gravity	1.15
31 to 31.9 gravity	1.20
32 to 32.9 gravity	1.25
33 to 33.9 gravity	1.30
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.40
36 to 36.9 gravity	1.45
37 to 37.9 gravity	1.50
38 to 38.9 gravity	1.55
39 to 39.9 gravity	1.60
40 to 40.9 gravity	1.65
41 to 41.9 gravity	1.70
42 to 42.9 gravity	1.75
43 to 43.9 gravity	1.80
44 gravity and above	1.85

Note—Gravity price schedule includes postings of exceptions shown.

Postings by Prairie Oil & Gas Co., The Texas Compa ing Co. includes Oklahoma, Kansas and North Texas. Ma homa, Kansas, North Texas, Panola County in East Te Texas. Humble Oil & Refining Co. includes North Texas Wortham, Currie, Moran, Nocona, Lytton Springs and Gypsy Oil Co. includes Oklahoma and Kansas.

*Posted by Magnolia Petroleum Co. only. †Adopted J uary 15; Carter Oil Co., January 16; Magnolia Petroleu Oklahoma and Kansas, January 17; Sinclair Oil & Gas C Co. and other major buyers, February 15. ‡For North Co 25 gravity, 72 cents; 25-25.9, 77 cents; 26-26.9, 82 cents; 29-29.9, 97 cents; 30-30.9, $1.02; 31-31.9, $1.07; 32-32.9, $1 above same as Oklahoma and Kansas. Posted April 10, at 25 degrees and below), and by the Prairie Oil & Gas C at 24 degrees and below, the Magnolia Petroleum Co. also 10 posted the following prices: Below 26 gravity, 70 c cents; 28-28.9, 88 cents; 29-29.9, 95 cents; 30-30.9, $1.02, 9 ing 44 degrees and above Magnolia followed Carter pr schedule apply to its gravity purchases in Kansas, Oklaho Magnolia Petroleum Co. on October 27 met the Stanolin in Oklahoma and Kansas for oil from 29 degrees upwar posted as follows: Below 26 degrees, 53 cents, with a dif upward beginning at 26-26.9 degrees at 57 cents and endin thereafter a 3-cent differential upward to 44 degrees and Refining Co. on October 28 adopted the Stanolind price s Texas, but made a top price at $1.07 for crude of 40 d Co. and Magnolia posted these prices on the same day.

CALIFORNIA

Standard Oil Co.-Union Oil Co.

	Seal Beach, Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill, Inglewood. (1)			Whittier, La Habra, Coyote Hills (2)			Montebello (3)			Santa Fe Springs (4)					Santa Maria, Coalinga (5)			Wheeler Ridge, Fruitvale (6)			Ventura Avenue, Potrero (7)			Midway-Sunset, Elk Hills, Lost Hills, Bedridge, Buena Vista Hills (8)		Orcutt, Ventura, Rincon (9)		
	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	May 17	June 14	Sept. 15	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	Sept. 15	Jan. 1	Mar. 11	Jan. 1	Mar. 11	Sept.
14 to 14.9 gravity	.70	.70	....	.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	..
15 to 15.9 gravity	.70	.70	....	.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	..
16 to 16.9 gravity	.70	.70	....	.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	..
17 to 17.9 gravity	.70	.70	....	.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	..
18 to 18.9 gravity	.75	.76	....	.75	.76	....	.70	.71	....	....	....	....	....	....	.56	.62	....	.56	.62	....	.40	.76	....	.56	.62	.70	.65	..
19 to 19.9 gravity	.80	.82	....	.80	.82	....	.75	.77	....	....	....	....	....	....	.62	.70	....	.62	.70	....	.40	.82	....	.62	.70	.70	.70	..
20 to 20.9 gravity	.85	.88	....	.84	.87	....	.80	.83	....	....	....	....	....	....	.68	.78	....	.68	.78	....	.40	.88	....	.68	.78	.70	.78	..
21 to 21.9 gravity	.89	.94	....	.88	.93	....	.85	.90	....	.89	.92	.50	.92	....	.74	.86	....	.74	.86	....	.40	.91	....	.74	.86	.86	.90	..
22 to 22.9 gravity	.93	1.00	....	.91	.98	....	.90	.97	....	.92	.95	.50	.95	....	.80	.94	....	.80	.94	....	.40	.94	....	.80	.94	.87	.95	..
23 to 23.9 gravity	.97	1.07	....	.94	....	1.04	.95	1.05	....	.95	1.01	.50	1.01	....	.85	1.02	....	.85	1.02	....	.40	1.00	....	.85	1.02	.90	1.02	..
24 to 24.9 gravity	1.01	1.14	1.12	.97	....	1.08	.98	1.11	1.08	.98	1.07	.50	1.07	1.05	.88	1.07	1.04	.88	1.07	1.04	.40	1.07	1.05	.90	1.09	.94	1.10	1.
25 to 25.9 gravity	1.05	1.21	1.17	1.00	....	1.12	1.01	1.17	1.11	1.01	1.13	.50	1.13	1.09	.91	1.12	1.06	.91	1.12	1.06	.60	1.14	1.10	.95	1.16	.98	1.18	1.
26 to 26.9 gravity	1.09	1.28	1.22	1.04	....	1.16	1.04	1.23	1.15	1.04	1.19	.50	1.19	1.13	.94	1.17	1.08	.94	1.17	1.08	.60	1.21	1.15	1.00	1.23	1.02	1.26	1.
27 to 27.9 gravity	1.13	1.35	1.26	1.08	....	1.21	1.07	1.29	1.19	1.07	1.25	.50	1.25	1.18	.98	1.23	1.11	.97	1.22	1.10	.60	1.28	1.19	1.05	1.30	....	....	1.
28 to 28.9 gravity	1.17	1.42	1.30	1.12	....	1.25	1.10	1.35	1.23	1.10	1.31	.56	1.31	1.23	1.02	1.27	1.15	....	....	....	.60	1.35	1.23	1.10	1.35	....	....	..
29 to 29.9 gravity	1.21	1.46	1.34	1.16	....	1.29	1.13	1.38	1.26	1.15	1.37	.62	1.37	1.28	1.06	1.31	1.19	....	....	....	.60	1.39	1.27	1.16	1.41	....	....	..
30 to 30.9 gravity	1.25	1.50	1.38	1.20	....	1.33	1.16	1.41	1.29	1.20	1.43	.68	1.43	1.33	1.10	1.35	1.23	....	....	....	.60	1.43	1.31	1.22	1.47	....	....	..
31 to 31.9 gravity	1.30	1.55	1.43	....	....	....	....	....	....	1.25	1.49	.74	1.49	1.38	1.14	1.39	1.27	....	....	....	.60	1.48	1.36	1.28	1.53	....	....	..
32 to 32.9 gravity	1.35	1.60	1.48	....	....	....	....	....	....	1.30	1.55	.80	1.55	1.43	1.18	1.43	1.31	....	....	....	.60	1.53	1.41	1.34	1.59	....	....	..
33 to 33.9 gravity	1.41	1.65	....	....	....	....	....	....	....	1.35	1.60	.85	1.60	1.48	1.22	1.47	1.35	....	....	....	.60	1.59	1.47	1.40	1.65	....	....	..
34 to 34.9 gravity	1.47	1.70	....	....	....	....	....	....	....	1.40	1.65	.90	1.65	1.53	1.26	1.51	1.39	....	....	....	.60	1.65	1.53	1.46	....	....	....	..
35 to 35.9 gravity	1.53	1.75	....	....	....	....	....	....	....	1.45	1.70	.95	1.70	1.58	1.30	1.55	1.43	....	....	....	.60	1.71	1.59	....	....	....	....	..
36 to 36.9 gravity	1.59	1.80	....	....	....	....	....	....	....	1.50	1.75	.95	1.75	1.63	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
37 to 37.9 gravity	1.65	1.85	....	....	....	....	....	....	....	1.55	1.80	.95	1.80	1.68	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
38 to 38.9 gravity	1.71	1.90	....	....	....	....	....	....	....	1.60	1.85	.95	1.85	1.73	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
39 to 39.9 gravity	1.77	....	....	....	....	....	....	....	....	1.65	1.90	.95	1.90	1.78	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
40 to 40.9 gravity	1.83	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
41 to 41.9 gravity	1.89	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	..
42 to 42.9 gravity	1.95	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	..

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 5—Oil below 14 gravity posted at 45 cents.

Columns 7 and 9—Posted by Union Oil Co. only.

Column 8—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California). Kettleman Hills, Union Oil Co., September 22, 35 to 39 gravity, $1.10; 40 to 44 gravity, $1.2 54 gravity, $1.50; 55 gravity and above, $1.65. Standard Oil Co. of California, 55 gravity and above, $1.65.

Note—Standard Oil Co. of California, December 18, established the following posed price in the Playa Del Rey Field: 20-20.9 degrees, 74 cents; 21-21.9 degrees, 77 cents; 22-22.9 de 84 cents; 24-24.9 degrees, 87 cents; 25 degrees and above, 90 cents.

ges in Crude Oil Prices in All Fields

XAS

CK COS.:

Apr.10	Oct.28
.65	.50
.68	.52
.71	.54
.74	.56
.76	.58
.78	.60
.80	.62
.82	.64
.84	.66
.86	.68
.88	.70
.90	.72
.92	.74

Refining Co., etroleum Co crude same nuary 16.

Jan.1	Apr.10
.65	.75

CROCKETT, LL, TEXAS, CO:

Apr.10	Oct.28
.65	.50
.68	.52
.71	.54
.74	.56
.77	.58
.80	.60
.83	.62
.86	.64
.89	.66
.92	.68
.95	.70
.98	.72
1.01	.74

Refining Co., Refining Co. o.

Co., on Oc- Pecos Coun- es, 55 cents, for each de- and above at

Co., January ., January 16.

ROCKY MOUNTAIN FIELDS

	Jan. 1	Feb. 15	Apr. 11	July 27	Oct. 28	Nov. 1
SALT CREEK—						
29 to 29.9 gravity	1.10	.90	1.00	....	....	....
30 to 30.9 gravity	1.15	.96	1.05	....	....	....
31 to 31.9 gravity	1.20	1.02	1.10	....	....	....
32 to 32.9 gravity	1.25	1.08	1.15	....	....	....
33 to 33.9 gravity	1.30	1.11	1.18½	....	....	....
34 to 34.9 gravity	1.35	1.14	1.22	....	....	....
35 to 35.9 gravity	1.40	1.17	1.25½	....	....	....
36 to 36.9 gravity	1.45	1.20	1.29	....	....	....
37 gravity and above	1.50	1.23	1.32½	....	....	....
ROCK CREEK (Wyo.)	1.40	1.25	1.35	....	1.01	....
BIG MUDDY	1.43	1.33	1.38	....	1.04	....
MULE CREEK	1.20	....	....	....	1.20	....
GRASS CREEK, LIGHT	1.65	1.45	1.55	....	1.25	....
GRASS CREEK, HEAVY	.90	....	....	.90	....	....
FOUR BEAR	.85	....	....	....	....	....
ELK BASIN	1.65	1.45	1.55	....	1.25	....
LANCE CREEK	1.68	1.53	1.63	....	1.33	....
POISON SPIDER	1.00	....	....	....	....	....
NOTCHES	.65	....	....	....	....	....
REX LAKE	1.10	....	....	....	....	....
OSAGE	1.65	1.53	1.63	....	1.00	.85
LOST SOLDIER	1.05	....	1.00	....	....	....
GREYBULL-TORCHLIGHT	1.65	1.45	1.55	....	1.35	....
HAMILTON DOME	.85	....	....	....	....	....
CAT CREEK (Mont.)	1.48	1.45	1.55	....	1.25	....
SUNBURST	1.75	1.65	....	....	1.55	....
ARTESIA (N. Mex.)	1.08	1.00	1.05	....	.75	....
HOGBACK	1.70	1.40	....	....	....	....
PEDRO	1.25	1.00	1.05	....	....	....
ILES—						
33 gravity and above	.99	.87	....	....	....	....
Below 33 gravity	.87	.65	....	....	....	....
PONDERA (Mont.)*	....	....	....	....	1.45	....
LEE COUNTY (see gravity table)	....	....	....	....	....	....

Note—Rock Creek, Big Muddy, Mule Creek, Grass Creek, light and heavy,' Elk Basin, Lance Creek, Rex Lake, Sunburst and Artesia posted by Ohio Oil Co.; all others and Grass Creek light posted by Midwest Refining Co.

*Pondera crude oil, $1.80 on February 1 and $1.55 on April 10.
Imperial Refining Co. posted Border, Mont., at $1.55, October 28.

MEXICAN CRUDES

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
PANUCO HEAVY, f.o.b. Tampico	.65	.65	.67	.67	.60	.60	.55	.55	.55	.56	.56	.56

Note—Prices based on transactions for previous month.

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

	Jan. 1	Jan. 1*	Feb. 15‡	Apr. 10‡	Oct. 25
Below 25 gravity	.85	.70	.60	.75	....
25 to 25.9 gravity	....	....	....	....	....
26 to 26.9 gravity	.95	.75	.72	.85	....
27 to 27.9 gravity	1.00	.85	.78	.90	....
28 to 28.9 gravity	1.05	.90	.84	.95	.65
29 to 29.9 gravity	....	....	....	....	.69
30 to 30.9 gravity	1.15	1.05	.96	1.05	.73
31 to 31.9 gravity	1.20	1.15	1.02	1.10	.77
32 to 32.9 gravity	1.25	1.25	1.08	1.15	.81
33 to 33.9 gravity	1.30	1.30	1.11	1.18½	.85
34 to 34.9 gravity	1.35	1.35	1.14	1.22	.89
35 to 35.9 gravity	1.40	1.40	1.17	1.25½	.92
36 to 36.9 gravity	1.45	1.45	1.20	1.29	.95
37 to 37.9 gravity	1.50	1.50	1.23	1.32½	.98
38 to 38.9 gravity	1.55	1.55	1.26	1.36	1.01
39 to 39.9 gravity	1.60	1.60	1.29	1.39½	1.04
40 to 40.9 gravity	1.65	1.65	1.32	1.43	1.07
41 to 41.9 gravity	1.70	1.70	1.35	1.46½	1.10
42 to 42.9 gravity	1.75	1.75	1.38	1.50	1.13
43 to 43.9 gravity	1.80	1.80	1.41	1.53½	1.16
44 gravity and above	1.85	1.85	1.44	1.57	1.19

Note—Gravity price schedule includes postings of all major companies in field with exceptions shown.

Postings by Prairie Oil & Gas Co., The Texas Company and Sinclair Crude Oil Purchasing Co. includes Oklahoma, Kansas and North Texas. Magnolia Petroleum Co. includes Oklahoma, Kansas, North Texas, Panola County in East Texas, Lytton Springs in Southwest Wortham, Currie, Moran, Nocona, Lytton Springs and Corsicana light. Carter Oil Co. and Gypsy Oil Co. includes Oklahoma and Kansas.

*Posted by Magnolia Petroleum Co. only. †Adopted by Humble Oil & Refining Co., January 15; Carter Oil Co., January 16; Magnolia Petroleum Co. in Texas, January 16, and Oklahoma and Kansas, January 17; Sinclair Oil & Gas Co., February 13; Prairie Oil & Gas Co. and other major buyers, February 15. ‡For North Central and East Texas fields below 25 gravity, 72 cents; 25-25.9, 77 cents; 26-26.9, 82 cents; 27-27.9, 87 cents; 28-28.9, 92 cents; 29-29.9, 97 cents; 30-30.9, $1.02; 31-31.9, $1.07; 32-32.9, $1.12; 33-33.9, $1.17; 34 gravity and above same as Oklahoma and Kansas. Posted April 10, 1930, by Carter Oil Co. (beginning at 25 degrees and below), and by the Prairie Oil & Gas Co. and other purchasers beginning at 24 degrees and below, the Magnolia Petroleum Co. alone excepted. The Magnolia on April 10 posted the following prices: Below 26 gravity, 70 cents; 26-26.9, 76 cents; 27-27.9, 82 cents; 28-28.9, 88 cents; 29-29.9, 95 cents; 30-30.9, $1.02. From 31 degrees up to and including 44 degrees and above Magnolia followed Carter price schedule, but made its whole schedule apply to its gravity purchases in Kansas, Oklahoma and North Central Texas alike. Magnolia Petroleum Co. on October 27 met the Stanolind Crude Oil Purchasing Co. prices in Oklahoma and Kansas for oil from 29 degrees upward, but on the lower gravity oils it posted as follows: Below 26 degrees, 53 cents, with a differential of 4 cents for each degree upward beginning at 26-26.9 degrees at 57 cents and ending with 34-34.9 degrees at 89 cents; thereafter a 3-cent differential upward to 44 degrees and above at $1.19. The Humble Oil & Refining Co. on October 28 adopted the Stanolind price schedule in North, East and Central Texas, but made a top price at $1.07 for crude of 40 degrees and upward. The Carter Oil Co. and Magnolia posted these prices on the same day.

CALIFORNIA

Standard Oil Co.-Union Oil Co.

	1			2			3			4				5			6			7			8		9			10		11		
	Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill, Inglewood.			Whittier, La Habra, Coyote Hills			Montebello			Santa Fe Springs				Santa Maria, Coalinga			Wheeler Ridge, Fruitvale			Ventura Avenue, Potrero			Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills		Orcutt, Ventura, Rincon			Elwood Terrace		Athens, Rosecrans, Dominguez		
	Jan.	Mar.	Sept.	Jan.	Mar.	Sept.	Jan.	Mar.	Sept.	Jan.	Mar.	May	June	Sept.	Jan.	Mar.	Sept.	Jan.	Mar.	Sept.	Jan.	Mar.	Sept.	Jan.	Mar.	Jan.	Mar.	Sept.	Jan.	Mar.	Jan.	Mar.	Sept.
	11	15		1	11	15	1	11	15	1	11	17	14	15	1	11	15	1	11	15	1	11	15	1	11	1	11	15	1	11	1	11	15
0	.70	....		.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	....	....	....	....	.70	....
0	.70	....		.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	....	....	....	....	.70	....
0	.70	....		.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	....	....	....	....	.70	....
0	.70	....		.70	.70	....	.70	.70	....	....	....	....	....	....	.50	.55	....	.50	.55	....	.40	.70	....	.50	.55	.65	.55	....	....	....	....	.70	....
5	.76	....		.75	.76	....	.70	.71	....	....	....	....	....	....	.56	.62	....	.56	.62	....	.40	.76	....	.56	.62	.70	.65	.62	....	....	....	.75	....
0	.82	....		.80	.82	....	.75	.77	....	....	....	....	....	....	.62	.70	....	.62	.70	....	.40	.82	....	.62	.70	.70	.70	....	....	....	....	.80	....
5	.88	....		.84	.87	....	.80	.83	....	....	....	....	....	....	.68	.78	....	.68	.78	....	.40	.88	....	.68	.78	.70	.78	....	....	....	....	.85	....
0	.94	....		.88	.93	....	.85	.90	....	.89	.92	.50	.92	....	.74	.86	....	.74	.86	....	.40	.91	....	.74	.86	.86	.90	.86	....	....	....	.89	....
3	1.00	....		.91	.98	....	.90	.97	....	.92	.95	.50	.95	....	.80	.94	....	.80	.94	....	.40	.94	....	.80	.94	.87	.95	.94	....	....	....	.93	....
7	1.07	....		.94	....	1.04	.95	1.05	....	.95	1.01	.50	1.01	....	.85	1.02	....	.85	1.02	....	.40	1.00	....	.85	1.02	.90	1.02	....	....	....	....	.97	....
1	1.14	1.12		.97	....	1.08	.98	1.11	1.08	.98	1.07	.50	1.07	1.05	.88	1.07	1.04	.88	1.07	1.04	.40	1.07	1.05	.90	1.09	.94	1.10	1.04	....	....	1.01	1.14	1.12
5	1.21	1.17		1.00	....	1.12	1.01	1.17	1.11	1.01	1.13	.50	1.13	1.09	.91	1.12	1.06	.91	1.12	1.06	.60	1.14	1.10	.95	1.16	.98	1.18	1.06	....	....	1.05	1.19	1.17
9	1.28	1.22		1.04	....	1.16	1.04	1.23	1.15	1.04	1.19	.50	1.19	1.13	.94	1.17	1.08	.94	1.17	1.08	.60	1.21	1.15	1.00	1.23	1.02	1.26	1.08	....	....	1.09	1.24	1.22
3	1.35	1.26		1.08	....	1.21	1.07	1.29	1.19	1.07	1.25	.50	1.25	1.18	.98	1.23	1.11	.97	1.22	1.10	.60	1.28	1.19	1.05	1.30	....	....	1.10	....	....	1.13	1.29	1.27
7	1.42	1.30		1.12	....	1.25	1.10	1.35	1.23	1.10	1.31	.56	1.31	1.23	1.02	1.27	1.15	....	....	....	.60	1.35	1.23	1.10	1.35	....	....	....	....	....	1.17	1.34	1.32
1	1.46	1.34		1.16	....	1.29	1.13	1.38	1.26	1.15	1.37	.62	1.37	1.28	1.06	1.31	1.19	....	....	....	.60	1.39	1.27	1.16	1.41	....	....	....	....	....	1.21	1.39	1.37
5	1.50	1.38		1.20	....	1.33	1.16	1.41	1.29	1.20	1.43	.68	1.43	1.33	1.10	1.35	1.23	....	....	....	.60	1.43	1.31	1.22	1.47	....	....	....	....	....	1.25	1.45	1.42
0	1.55	1.43		....	....	....	....	....	....	1.25	1.49	.74	1.49	1.38	1.14	1.39	1.27	....	....	....	.60	1.48	1.36	1.28	1.53	....	....	....	....	....	1.30	1.51	1.47
5	1.60	1.48		....	....	....	....	....	....	1.30	1.55	.80	1.55	1.43	1.18	1.43	1.31	....	....	....	.60	1.53	1.41	1.34	1.59	....	....	....	....	....	1.35	1.57	1.52
1	1.65	....		....	....	....	....	....	....	1.35	1.60	.85	1.60	1.48	1.22	1.47	1.35	....	....	....	.60	1.59	1.47	1.40	1.65	....	....	....	....	....	1.41	1.64	1.57
7	1.70	....		....	....	....	....	....	....	1.40	1.65	.90	1.65	1.53	1.26	1.51	1.39	....	....	....	.60	1.65	1.53	1.46	....	....	....	....	....	1.16	1.32	1.47	1.71	1.62
3	1.75	....		....	....	....	....	....	....	1.45	1.70	.95	1.70	1.58	1.30	1.55	1.43	....	....	....	.60	1.71	1.59	....	....	....	....	....	....	1.22	1.39	1.53	1.78	1.66
9	1.80	....		....	....	....	....	....	....	1.50	1.75	.95	1.75	1.63	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.28	1.46	1.60	1.84	1.72
5	1.85	....		....	....	....	....	....	....	1.55	1.80	.95	1.80	1.68	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.34	1.53	1.65	1.90	1.78
1	1.90	....		....	....	....	....	....	....	1.60	1.85	.95	1.85	1.73	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.40	1.60	1.71	1.96	1.84
7	....	....		....	....	....	....	....	....	1.65	1.90	.95	1.90	1.78	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.46	1.66	1.77	2.02	1.90
3	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.52	1.72	1.83	2.08	2.02
9	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.58	1.78	1.89	2.14	2.08
5	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.60	....	....	....	....	....	....	....	....	1.64	1.84	1.95	2.20	....

l, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; secrans, 24 to 42.9 gravity.

rude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

14 gravity posted at 45 cents.

sted by Union Oil Co. only.

r, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.

ravity and above, $1.65 (posted by Standard Oil Co. of California). Kettleman Hills, Union Oil Co., September 22, 35 to 39 gravity, $1.10; 40 to 44 gravity, $1.20; 45 to 49 gravity, $1.35; 50 to ity and above, $1.65. Standard Oil Co. of California, 55 gravity and above, $1.65.

o. of California, December 18, established the following posted price in the Playa Del Rey Field: 20-20.9 degrees, 74 cents; 21-21.9 degrees, 77 cents; 22-22.9 degrees, 81 cents; 23-23.9 degrees, 87 cents; 25 degrees and above, 90 cents.

A
AVERAG

Average Prices for the Years 1930, 1929 and 1928

AVERAGE AND HIGH AND LOW PRICES FOR REFINED PRODUCTS, BASED IN LOW WEEKLY QUOTATIONS OF THE OIL AND GAS JOURNAL

(Prices Given in Cents per Gallon Unless Otherwise Noted)

	1930					1929					1928				
				Average price					Average price					Average price	
	Av. pr. for yr.	High	Low	1st 6 mos.	2nd 6 mos.	Av. pr. for yr.	High	Low	1st 6 mos.	2nd 6 mos.	Av. pr. for yr.	High	Low	1st 6 mos.	2nd 6 mos.
GASOLINE AND NAPHTHA—Oklahoma (Group 3):															
50-52 450 endpoint	.0591	.07	.04¼	.0648	.0538	.0721	.08¾	.06½	.0725	.0718	.0738	.09¼	.05½	.0618	.0858
56-58 450 endpoint	.0571	.07	.04	.0626	.0521	.0711	.08¾	.06½	.0726	.0698	.0974	.09¼	.05½	.0622	.0859
58-60 437 endpoint (U. S. Motor)*	.0634	.075	.04	.0688	.0584	.0775	.09¼	.0685	.0779	.0771	.0795	.0971	.05⅝	.0644	.0927
60-62 437 endpoint*	.0616	.075	.04⅛	.0679	.0557	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
64-66 400 endpoint*	.0674	.0775	.04¼	.0721	.0631	.0808	.0969	.0732	.0818	.0799	.0833	.1035	.06¼	.0701	.0969
68-70 375 endpoint*	.0704	.0812	.04⅝	.0767	.0646	.0855	.0983	.07½	.0872	.0850	.0883	.1100	.06¾	.0733	.1039
68-70 360 endpoint	.0707	.08½	.05	.0771	.0647	.0837	.09¾	.07¾	.0859	.0816	.0885	.1125	.07	.0746	.1024
*Weighted average prices as reported by representative refiners. Sales to jobbers only.															
North Texas:															
58-60 437 endpoint (U. S. Motor)	.0572	.07	.04	.0627	.0521	.0756	.08⅞	.06¼	.0730	.0701	.0769	.09¾	.05⅝	.0651	.0888
60-62 400 endpoint	.0601	.07¼	.04¼	.0656	.0550	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
64-66 390 endpoint	.0631	.07½	.04½	.0694	.0573	.0774	.09¼	.07¼	.0790	.0759	.0827	.10¼	.06½	.0704	.0951
64-66 375 endpoint	.0658	.07⅝	.04¾	.0726	.0594	.0798	.09½	.07¼	.0816	.0781	.0849	.10⅝	.06¾	.0722	.0976
North Louisiana:*															
58-60 437 endpoint (U. S. Motor)	.0675	.07¾	.04¾	.0713	.0639	.0793	.09¾	.07	.0797	.0790	.0825	.10¾	.06	.07	.0949
Pennsylvania:															
52-54 Naphtha	.0703	.07¾	.06	.0733	.0675	.0829	.09	.07¼	.0847	.0811	.0934	.11¼	.07½	.0825	.1042
58-60 Gasoline	.0737	.08¼	.06¼	.078	.0697	.0905	.10	.07¾	.0941	.0871	.0982	.12	.07½	.0864	.1101
70 Gasoline	.0756	.08½	.06½	.0801	.0715	.0935	.10½	.08	.0980	.0892	.1038	.12¾	.08	.0906	.1171
74 Gasoline	.0808	.09	.07	.0841	.0777	.1016	.12	.08½	.1062	.0971	.1138	.13½	.09	.0972	.1303
California:															
54-58 437 endpoint (U. S. Motor), domestic†	.0806	.09½	.06½	.0806	.0806	.0889	.10	.06	.0877	.09	.0919	.10½	.07	.0874	.0964
Gulf Coast (Export):															
58-60 U. S. Motor	.0751	.08½	.05⅛	.0816	.0691	.0849	.08½	.08¼	.0848	.085	.....	.....	.....	.....	.....
60-62 400 endpoint	.0838	.09½	.05½	.0916	.0766	.0949	.09½	.09¼	.0948	.095	.....	.....	.....	.....	.....
64-63 390 endpoint	.0865	.09¾	.05¾	.0941	.0795	.0974	.09¾	.09½	.0973	.0975	.....	.....	.....	.....	.....
64-66 375 endpoint	.0888	.10	.06	.0956	.0826	.0999	.10	.09¾	.0998	.10	.....	.....	.....	.....	.....
*Louisiana, Arkansas, Mississippi and East Texas delivery.															
NATURAL GASOLINE—Oklahoma (Group 3):															
Grade A, 72-79.9, 375 e.p., rec. 90%	.0536	.06½	.03¼	.0587	.0489	.0706	.08	.06¼	.0755	.0658	.0744	.10¾	.04⅛	.0549	.0939
Grade AA, 80-87.9, 375 e.p., rec. 90%	.0524	.06½	.03	.0571	.0481	.0683	.08	.05½	.0716	.0614	.0734	.10¾	.04⅞	.0541	.0927
Grade B, 76-83.9, 375 e.p., rec. 85%	.0494	.06½	.02¾	.0522	.0471	.0637	.07¾	.05¼	.0656	.0619	.0691	.10¾	.03⅝	.0474	.0908
Grade BB, 84-92, 375 e.p., rec. 85%	.0488	.06½	.02¾	.0509	.0468	.0630	.07¾	.05¼	.0645	.0616	.0685	.10¾	.03½	.0469	.09
Grade C, 80-92, 375 e.p., rec. 78%	.0483	.06½	.02¾	.0502	.0466	.0618	.07½	.04⅞	.0623	.0613	.0666	.10¾	.03⅞	.0441	.0892
California:															
375-378 375-390 endpoint	.0712	.08½	.05¾	.0753	.0675	.0803	.09	.06	.0777	.0828	.0726	.08½	.05½	.0780	.0672
BURNING OIL—Oklahoma (Group 3):															
41-43 water white Kerosene	.0358	.04⅛	.03	.0406	.0314	.0517	.06¾	.04⅛	.0549	.0487	.0517	.06½	.04⅛	.0430	.0574
42-44 water white Kerosene	.0390	.04⅝	.03¼	.044	.0341	.0573	.07⅛	.04⅜	.0617	.0532	.0556	.06¾	.04⅝	.0503	.0608
North Texas:															
41-43 water white Kerosene	.0348	.04⅛	.03	.0394	.0305	.0517	.07¼	.04	.0568	.0468	.0503	.06⅝	.04⅛	.0456	.0550
Pennsylvania:															
43 Kerosene, prime white	.0501	.05¾	.04¼	.0546	.0460	.0651	.07¼	.05¾	.0690	.0614	.0635	.07½	.05¾	.0582	.0688
45 Kerosene, water white	.0526	.06	.04¼	.0568	.0487	.0667	.07¼	.06	.0703	.0632	.0663	.07¾	.06	.0625	.0701
California:															
38-40 water white Kerosene (high burning test)	.0455	.05	.04	.0446	.0463	.0569	.06½	.05	.0620	.0520	.0611	.06¾	.05½	.0561	.0660
Gulf Coast (Export):															
41-43 prime white	.0588	.07	.04	.0632	.0547	.0714	.07¾	.06⅝	.0728	.07	.....	.....	.....	.....	.....
41-43 water white	.0668	.08	.05	.073	.0610	.0814	.08¾	.07⅝	.0828	.08	.....	.....	.....	.....	.....
FUEL OIL—Oklahoma (Group 3):															
Below 18 Fuel Oil, per bbl.	.5225	.70	.40	.613	.438	.526	.70	.45	.499	.5530	.6298	.80	.50	.7202	.5394
24-26 Fuel Oil, per bbl.	.7043	.90	.55	.792	.623	.706	.90	.60	.646	.7630	.7694	.85	.55	.8010	.6144
32-36 Gas Oil (industrial)	.0227	.02⅞	.02	.0245	.0211	.0265	.03	.02¼	.0262	.0268	.0247	.02⅝	.02⅜	.0248	.0245
38-40 Straw Distillate	.0294	.03⅜	.02¾	.0313	.0275	.0365	.04⅜	.03¼	.0363	.0367	.0313	.03⅜	.03	.0306	.0320
North Texas:															
Below 20 Fuel Oil, per bbl.	.4649	.65	.30	.547	.39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32-36 Gas Oil (industrial)	.0215	.02⅞	.02	.0231	.0201	.0267	.03⅛	.02¼	.0266	.0269	.0231	.02½	.02¼	.0235	.0226
38-40 Straw Distillate	.0287	.03¾	.02¾	.03	.0275	.0359	.04¼	.03⅛	.0359	.0359	.0296	.03	.02⅞	.0298	.0294
North Louisiana:*															
18-20 Fuel Oil, per bbl.	.0782	.85	.70	.80	.76	.7428	.80	.70	.72	.76	.8394	1.00	.70	.9083	.7702
Gulf Coast (South Texas):															
Gas Oil	.0375	.04	.03½	.0381	.0370	.0387	.04¼	.03½	.0378	.0397	.0416	.04¼	.037⅛	.0421	.0411
Bunker C Fuel (cargo lots), per bbl.	.7130	.80	.62½	.714	.712	.7397	.80	.65	.756	.72	1.018	1.25	.75	1.1884	.8481
Pennsylvania:															
30-34 Fuel Oil	.0386	.04¾	.03	.0426	.0349	.0441	.04¾	.04	.0454	.0428	.0449	.047⅛	.04⅛	.0471	.0427
36-40 Fuel Oil	.0401	.04	.03¼	.0440	.0365	.0455	.05¼	.04¼	.0489	.0449	.0472	.05	.04¼	.0491	.0452
California:															
26-32 Distillate	.0181	.02	.01¾	.0188	.0175	.0282	.03½	.02	.032	.025	.0269	.03	.02¼	.0248	.0290
15-19 Fuel Oil, Bunker (at tidewater)	.6346	.70	.55	.65	.62	.6724	.85	.65	.69	.66	.8692	1.00	.85	.884	.85
27 plus Diesel, per bbl.	.8365	.90	.75	.85	.82	.90	1.15	.90	.90	.90	1.15	1.15	1.15	1.15	1.15
*Louisiana, Arkansas, Mississippi and East Texas delivery.															
LUBRICATING OIL AND WAX—Oklahoma (Group 3):															
100 vis., 3 color, 20-25 cold test	.0545	.05¾	.04¾	.0556	.0534	.0561	.06	.05¼	.0547	.0575	.06	.06	.06	.06	.06
180 vis., 3 color, 23-28 cold test	.0927	.10	.08½	.0986	.0872	.0915	.09¾	.08¾	.0894	.0934	.0945	.09⅜	.09¼	.0937	.0954
180 vis., 5 color, 23-28 cold test	.0838	.09½	.07¼	.09	.0780	.0850	.09	.08¼	.0840	.0859	.0911	.09⅛	.09	.0912	.0910
200 vis., 3 color, 23-28 cold test	.1059	.11½	.09¾	.111	.1012	.0966	.10¾	.09¼	.0938	.0994	.0947	.09½	.09¼	.095	.0944
240 vis., 5 color, 25-30 cold test	.1171	.13½	.11¼	.128	.1162	.1155	.12¾	.10¾	.1116	.1194	.1222	.12¼	.12	.1225	.1219
Cylinder Stocks: 600, steam refined, light green	.0831	.10	.07	.09	.0767	.1098	.14½	.08	.1042	.115	.08	.08	.08	.08	.08
150-160 vis., D color, Bright Stock (10-25 C.T.)	.2977	.37	.18	.366	.23	.3368	.37	.28	.31	.36	.2255	.25	.22	.2242	.2473
Waxes: 124-126 White Crude Scale Wax	.0216	.02¾	.01¾	.0234	.0199	.0321	.05	.02½	.0364	.0279	.0394	.05	.02½	.0321	.0468
All Bright Stock prices are for domestic movement.															
Pennsylvania:															
200, 3 color	.2111	.25½	.16½	.246	.1787	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
600, steam refined	.1591	.24	.09	.218	.1045	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
600, Pennsylvania flash (below 35 C.T.)	.2337	.32	.14½	.298	.1741	.3646	.41½	.70	.41	.321	.1789	.29½	.14	.1546	.2031
Pennsylvania Bright Stocks	.3073	.43	.19	.39	.23	.4745	.57	.39	.452	.496	.3186	.36	.26½	.2846	.3523
Gulf Coast (South Texas):															
200 vis., 3 color, pale oil	.0912	.09½	.08¼	.0922	.0901	.0890	.09½	.08½	.089	.089	.0906	.10	.07½	.0914	.0898
200 vis., 5-6 color, red oil	.0829	.08¾	.07	.0831	.0828	.0779	.08½	.07	.0778	.078	.0800	.08½	.07½	.0771	.0830
California:															
200 vis., 2½-3 color	.1074	.11½	.10	.11	.1050	.1150	.11½	.11½	.115	.115	.1057	.11½	.10	.10	.1114
Red Neutral:															
200 vis., 4½-5 color	.1063	.11	.09½	.11	.1028	.11	.11¼	.11	.11	.11	.0954	.11½	.08½	.085	.1058
NEW YORK (BAYONNE) REFINERY PRICES—															
Gasoline, U. S. Motor, 58-60, 437 e.p.	.0807	.09	.06¼	.0864	.0755	.0940	.10½	.08¾	.096	.0920	.1020	.11¾	.08¼	.0918	.1125
Kerosene, water white, 41-43	.07	.07¾	.06	.0742	.0662	.0806	.09	.07¾	.0832	.0781	.0803	.09	.07½	.0754	.0852
Fuel Oil, Bunker "C," 14-16°	1.0919	1.15	1.05	1.094	1.09	1.05	1.05	1.05	1.05	1.05	1.188	1.35	1.05	1.3192	1.057
Fuel Oil, Diesel, 28-30, per bbl.†	1.9913	2.00	1.85	2.00	1.98	2.00	2.00	2.00	2.00	2.00	2.013	2.10	2.00	2.0268	2.00
Gas Oil, 28 plus gravity	.0472	.04¾	.04¼	.0475	.0469	.0516	.05¼	.04¾	.0512	.0519	.0530	.05½	.05½	.0534	.0525
28 pale Paraffin Oil, tank car	.0725	.07¼	.07¼	.0725	.0725	.0730	.07½	.07¼	.0736	.07¼	.0708	.07½	.07	.07	.0715
750 red Paraffin Oil, tank car	.1150	.11½	.11½	.115	.1150	.1108	.11½	.11	.11	.1110	.1058	.11	.10½	.105	.1065
Refined Wax: 120-122 a.m.p., per lb.	.0326	.03⅞	.02¾	.0358	.0296	.0424	.05⅝	.03⅜	.0468	.0381	.0466	.05¾	.03⅞	.0401	.0530
Petrolatum in bbls., in carload lots, per lb.: Amber	.0291	.03⅜	.03¼	.0336	.0325	.0353	.03⅝	.03½	.035	.0355	.0339	.03½	.03¼	.0333	.0346
*Lighterage, 5 cents a barrel extra. †Lighterage 6.5 cents per barrel.															
NEW YORK (BAYONNE) EXPORT PRICES—															
600, steam refined Cylinder Stocks, in bbls.	.236	.31½	.16½	.303	.1746	.3347	.43	.30	.3502	.32	.1946	.270	.1650	.1717	.2179
600, Pennsylvania flash	.3267	.40	.23½	.39	.2681	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Light 140-150 Bright Stocks	.3935	.52	.26	.4812	.30	.5612	.63	.46	.534	.59	.4137	.4450	.3600	.3934	.4338
LOS ANGELES EXPORT PRICES—															
Kerosene, water white	.0417	.04¾	.03¾	.0407	.0427	.0508	.05½	.04½	.055	.047	.0514	.0575	.045	.0483	.0544
U. S. Motor Gasoline, 53-55, 437 e.p.*	.0633	.06¾	.04¾	.0634	.0631	.0693	.08	.06¼	.0718	.0668	.0746	.085	.06	.0666	.0826
*For coastwise and off-shore shipments.															

ary 29

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No New Major Pools in West Texa

Record of 1930 Consisted of Extensions and Small New Areas Not Developed Because of Bad Industrial Conditions

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

The salient features of West Texas activities in 1930 may be classed under a few headings, with apparently no major pools having been uncovered during the year. There were several extensions made in various producing areas, and the Penn Pool in Ector County, discovered in October, 1929, was rapidly developed during the first nine months of the year until it reached a total of 79 producing wells on fifty-four 40-acre units having a potential daily production of close to 40,000 bbls. The outlet of the Penn Pool was limited throughout the year, the last half of December standing at 8,000 bbls. per day.

Dry holes define the pool to the southeast, east, north and northwest.

The tight lime formation from which this pool produces is given a shot in practically every well to stimulate production.

The pool is now approximately 1¾ miles wide and 3¼ miles long, but may be extended to the south or southwest, although the Mid-Kansas Oil & Gas Co.'s No. 1 University in the north half of Section 3 quit flowing and is now on the pump, making this well appear as if being near to the southern producing limits of the field.

Northern Ector County

The northern part of Ector County came in for a vast amount of attention with consequent leasing and royalty buying activities following the discovery of the Southern Crude Oil Purchasing Co. in Section 26, Block 43, approximately 19 miles north of the Penn Pool, during the forepart of September. Various gas showings in this well were found at 3,943, 4,032 and 4,075-80 feet, with an oil show encountered at 3,063-65 feet before the main pay was picked up at 4,130-35 feet. It was completed for an initial production of 256 bbls. per day, pinched in, the well estimated good for from 450 to 500 bbls. per day opened. It is only allowed to flow about 40 bbls. per day into storage, and no pipe line has ever been run into the area.

The Deep Rock Oil Co. and others completed two more tests in their Ogden area, Andrews County, during 1930, but these wells did not prove startling, and the pool is only producing around 90 bbls per day. The associated companies are now drilling another test in the area on the Kuykendall Ranch in Section 24, Block 46-A, to the west of the Ogden Pool discovery, and this test will either prove an extension or a defining point to the west. The discovery well is producing from lime pay topped at 4,345-48 feet with increases in oil found at 4,361-66 feet and 4,414-28 feet. Total depth is 4,428 feet.

Six miles south of the Deep Rock-Ogden Pool, Andrews County, another area was opened to production in October of 1930. The Fuhrman Petroleum Corp.'s No. 1 Ford, located 440 feet from the south and 2,200 feet from the west of Section 16, Block 43-A, was finally completed for an initial production of 235 bbls. after it was plugged back from a total depth of 4,613 feet where it encountered sulphur water, and was with 150 quarts from 4,384-4,53 and a second shot of 200 quarts 4,287-4,474 feet. Gravity of the oil near 24°.

This new area is approximate miles northwest of the Southern Oil Purchasing Co.'s No. 1 Cowden, tioned above, and trading on inter acreage was exceedingly brisk diately after the Fuhrman test e tered 26,000,000 feet of gas, and getting an oil showing acreage ad in price gradually, companies purch protection between the two wells.

New Pool in Crane County

Another wildcat discovery well year was Cranfill Brothers and Gulf duction Co.'s No. 1 Tubbs in the e half of Section 8, Block 27-B, P School Lands Survey, 18 miles w the Church-Fields and McElroy Poo western Crane County, and is the well in the Permian Basin to pick oil-producing horizon after sulphur

WEST TEXAS

Daily Average and Monthly Production of Crude Oil in 1930.

Field and County—	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	To (bbls.)
BENNETT-WARD—													
Daily average	.....	151	149	161	167	164	144	153	157	218	183	177	
Month	.....	4,249	4,608	4,827	5,166	4,917	4,470	4,731	4,714	6,750	5,487	5,508	
BIG LAKE, REAGAN—													
Daily average	15,362	16,609	16,455	16,481	16,289	17,786	21,278	17,521	21,555	23,029	25,407	22,785	
Month	476,221	465,046	510,106	494,429	504,968	533,577	659,610	543,140	646,651	713,907	762,228	706,321	7,8
CHALK-SETTLES, GLASSCOCK AND HOWARD—													
Daily average	38,750	38,309	38,651	39,019	35,637	30,350	29,173	22,411	22,938	26,454	27,564	19,159	
Month	1,201,247	1,072,654	1,198,195	1,170,577	1,104,756	910,500	904,366	694,841	686,815	824,097	826,914	593,924	11,1
CHURCH, FIELDS, CRANE—													
Daily average	20,250	21,603	22,130	21,063	21,771	19,300	18,809	15,382	15,029	13,977	13,492	13,237	
Month	627,764	605,033	686,027	631,879	674,886	579,009	583,076	476,852	450,866	433,279	404,765	410,347	6,8
HENDRICKS, WINKLER—													
Daily average	88,130	90,993	87,194	80,480	72,542	69,306	68,355	67,886	61,378	56,965	57,363	53,212	
Month	2,732,030	2,547,797	2,703,013	2,414,414	2,248,817	2,079,180	2,119,006	2,104,480	1,841,349	1,764,044	1,720,887	1,650,564	25,9
McCAMEY-TAYLOR, UPTON-CRANE—													
Daily average	7,681	9,563	10,485	8,687	8,173	6,237	6,534	2,663	2,784	6,562	7,546	6,604	
Month	238,114	267,773	325,044	260,602	278,123	187,100	202,579	82,545	83,529	203,422	226,382	204,734	2,5
McELROY, CRANE—													
Daily average	14,298	13,850	14,122	13,893	13,936	14,066	14,089	14,244	12,551	13,132	14,023	12,784	
Month	443,233	387,790	437,781	416,781	432,011	421,993	436,761	441,571	376,546	407,078	420,696	396,318	5,0
IRA, SCURRY—													
Daily average	24	22	20	24	24	25	24	10	12	16	9	10	
Month	750	624	624	722	756	759	756	311	349	511	263	315	
WORLD, CROCKETT—													
Daily average	1,569	1,851	1,627	1,618	1,730	1,807	2,068	2,196	2,154	2,033	1,890	1,727	
Month	48,645	51,817	50,449	48,547	53,621	54,203	64,113	68,079	64,627	63,021	56,703	53,539	6
STEPHENS, FISHER—													
Daily average	1,197	1,302	1,031	970	1,566	1,930	1,871	1,777	1,750	1,823	1,813	1,396	
Month	37,096	36,462	31,956	29,091	48,536	57,907	58,066	55,088	52,514	56,496	54,400	43,281	5
WESTBROOK-IATAN, MITCHELL—													
Daily average	2,085	2,134	2,078	2,042	2,160	2,159	2,133	2,046	2,176	2,047	2,132	2,031	
Month	64,633	59,710	64,405	61,257	66,950	64,777	66,121	63,390	65,270	63,468	63,974	62,974	7
WHEAT, LOVING—													
Daily average	1,052	1,312	1,263	1,247	1,394	1,850	1,720	1,622	2,383	2,526	2,775	2,804	
Month	32,610	36,735	39,141	37,406	43,225	55,505	53,331	50,279	71,505	78,297	83,264	86,917	6
YATES, PECOS—													
Daily average	142,196	133,811	128,762	112,792	112,800	113,280	102,447	99,924	98,919	94,107	101,686	95,039	
Month	4,408,086	3,746,688	3,991,593	3,383,769	3,496,793	3,396,918	3,175,469	3,097,652	2,967,587	2,917,327	3,050,578	2,946,196	40,5
OGDEN, ANDREWS—													
Daily average	.....	.....	.....	.....	175	199	105	113	100	28	133	138	
Month	.....	.....	.....	.....	5,420	5,984	3,261	3,501	3,000	870	3,990	4,273	3
HAYZLETT, WARD—													
Daily average	469	491	434	443	328	383	405	295	381	469	443	287	
Month	14,545	13,735	13,457	13,280	10,161	11,487	12,545	9,149	11,445	14,554	13,290	9,107	1
O'BRIEN-HUTCHINGS, WARD—													
Daily average	1,053	941	940	899	1,337	1,510	1,771	2,232	2,687	3,479	2,925	2,614	
Month	32,630	26,345	29,130	26,969	41,440	45,298	54,893	69,199	80,614	107,853	87,756	91,034	6
GRAND FALLS, WARD—													
Daily average	22	80	70	65	63	87	74	72	79	113	70	77	
Month	774	2,228	2,181	1,961	1,938	2,518	2,305	2,224	2,372	3,501	2,103	2,388	2
MERTSON, IRION—													
Daily average	68	.....	.....	.....	132	120	86	171	93	77	43	84	
Month	2,100	.....	.....	.....	4,078	3,604	2,666	5,270	2,790	2,387	1,290	2,604	2
PECOS VALLEY, PECOS—													
Daily average	76	142	127	142	197	197	.....	.....	163	139	146	203	
Month	2,361	3,967	3,928	5,257	6,109	5,914	.....	.....	4,890	4,247	4,380	6,293	4
PENN, ECTOR—													
Daily average	607	820	4,004	7,632	14,334	18,510	18,945	8,642	8,316	8,136	6,618	7,264	
Month	18,815	24,965	124,121	228,970	444,352	555,296	587,306	267,873	249,493	252,216	198,547	225,170	3,1
TAYLOR-LINK, PECOS—													
Daily average	6,937	7,171	5,235	5,249	4,267	3,739	3,488	3,281	3,070	3,361	2,517	2,143	
Month	215,082	200,794	162,296	157,460	132,274	112,166	180,128	101,711	90,210	104,186	75,510	66,412	1,5
TAYLOR, TAYLOR—													
Daily average	116	115	115	99	109	30	42	72	98	93	120	182	
Month	3,600	3,316	3,650	2,961	3,383	900	1,305	2,240	2,725	2,880	3,591	5,647	3
PHILLIPS-PRYOR, PECOS—													
Daily average	39	.....	.....	.....	.....	.....	.....	2	2	2	2	2	
Month	1,215	.....	.....	.....	.....	.....	.....	62	59	66	55	65	1
TOBORG, PECOS—													
Daily average	237	554	965	1,492	1,887	1,313	1,239	1,051	1,325	1,811	1,404	1,513	
Month	7,332	15,481	29,920	44,757	58,486	39,402	38,403	32,566	39,766	56,126	42,140	46,888	4
WADDELL, CRANE—													
Daily average	.....	36	33	30	29	33	21	35	30	30	29	24	
Month	.....	1,106	1,022	885	892	1,006	654	1,090	910	921	870	744	1
Daily average	342,222	341,938	335,892	314,560	311,843	304,341	294,819	263,801	260,020	260,694	270,335	245,828	
Total 1930	10,608,883	9,574,215	10,412,647	9,436,801	9,667,141	9,130,220	9,139,390	8,177,844	7,800,596	8,081,504	8,110,063	7,620,660	107,7
Total 1929	11,380,341	9,966,066	11,609,104	10,599,784	10,990,292	10,987,539	12,331,644	11,603,989	10,994,567	11,245,661	10,411,381	10,667,906	132,7
Total 1928	8,821,701	9,036,190	10,380,877	11,149,642	9,873,668	8,947,700	10,618,416	10,735,515	10,307,046	10,842,478	9,716,950	10,202,810	126,6
Total 1927	2,126,352	1,857,800	2,331,510	2,752,080	3,514,935	3,333,150	3,490,693	4,255,804	5,405,430	6,441,924	6,583,410	7,596,569	49,6

GENERAL SLOWING UP OF WORK IN OLD CENTRAL WEST FIELDS

By George A. Whitney
Staff Correspondent, Central West Fields

A general review of development work over the various divisions of the Central West Field, comprising the Lima Field of northwestern Ohio, Central Ohio Field, Indiana and Illinois, for the year 1930 reveals only a fair showing with a total of 1,753 wells completed, of which 639 were producers with an initial production of 22,091 bbls., 544 dry holes and 570 gas wells; while in the year 1929 the same fields completed 2,157 wells, 929 producers with an initial of 33,033 bbls., 582 dry holes and 646 gas wells, a decrease for 1930 compared with the 1929 figures of 404 completions, 290 producers, 10,942 bbls. production, 38 dry holes, but 76 more gas wells. The year 1930 there were 587 old wells abandoned against 504 for 1929. The Lima Field failed to show any wells above the average, hence the year just closing showed about one-half the initial production of the wells of recent years. Hardin County took the lead in completed work in the Lima Field, which was held by Seneca County in 1929. The Hardin County Field is more of a gas-producing area, not large wells.

The Central Ohio Field, as usual of late years, leads all other divisions of the Central West Field in completions, production, dry holes and gas wells. The bulk of the work in this field is for gas, but an occasional good oil producer is found in the deep sands. May, June, August and October were the leading months of development when more than 100 wells were finished each month, the lowest month's work of the year being in December, when only 71 wells were reported completed. The late gas wells fail to show the big gas volume of a few years ago. At present a well with a volume of 1,000,000 feet a day is considered a commercial proposition, while a few years ago many wells from 10,000,000 feet up were looked upon as only ordinary gas wells.

The Central Ohio Field proved up fairly productive in both oil and gas production, there being a few good producers of both oil and gas, with oil in the lead, throughout a large portion of the 31 counties listed during the year of 1930. In these counties a total of 1,129 wells were completed, with 347 oil producers with an initial production of 14,888 bbls., 342 dry holes and 440 gas wells. This is a decrease when compared with the 1929 figures of 253 wells, 75 more oil wells, 3,423 bbls. more initial production, 35 more dry holes and 143 more gas producers. Muskingum County leads in the number of completions, followed by Ashland, Athens, Licking and Medina Counties, the first three having more than 100 completions, the other two being with one to nine wells short of the 100 mark. Muskingum County shows the largest oil production with 70 oil wells, with an initial production of 5,308 bbls., with Licking County second with 68 oil wells with an initial of 4,010 bbls.; Guernsey County, 34 oil wells with an initial of 1,435 bbls., and Tuscarawas County fourth with 29 producers for 1,096 bbls. Thirty-six oil wells in Ashland County produced but 259 bbls. the first 24 hours flush production. Holmes County secured an initial production of 812 bbls. from 12 wells, which is a very good average.

The Indiana Field experienced during the year 1930 much better results from the drill than in previous years. Pike County, in the southwestern part of the State, proved the most productive of the entire season, and if reports are correct this field should show better in 1931.

The Illinois Field experienced a rather slack year in development, with Crawford County registering the largest number of completions, 58, with an initial production of 498 bbls., while the Dupo Field in St. Clair County listed 57 completions with an initial production of 1,516 bbls.

Crude prices were considerably lower during the 1930 season than during the previous year, and the big overproduction of crude in the western territory brought about the slump in prices. In the face of this condition, operators are picking up

(Continued on Page 228)

been encountered, apparently proving that water in tests in the basin should not be considered as a sign of failure for those tests. This find is no doubt one of the greatest theory-breaking factors in the history of geology in West Texas, and changes the aspect of many thousands of acres which have heretofore been considered as no good due to tests having struck water and been abandoned as a consequence. Top of the pay horizon was logged 275 feet below where the last water was encountered. The first water was logged at 2,000-03 feet, and there was 2,000 feet of water in the hole at 2,305 feet. Top of the white lime was logged at 2,455 feet; 50,000 feet of gas was hit at 2,665-76 feet, 1,500,000 feet was struck at 2,811 feet and an increase registered at 2,865 feet with 6,000,000 feet showing at 2,930 feet. The pay was encountered at 4,295 feet and the test drilled to 4,303 feet before shutting down temporarily to erect storage. It seemed to be a phenomenal well when it flowed 500 bbls. in five minutes during its first head, but during the first 24-hour open flow test it flowed only 1,051 bbls., leaving a much different impression than it first created.

After storage was erected the owners decided to drill it deeper, Gulf Production Co. having taken the well over to drill deeper and complete some time before the pay was encountered, consequently Gulf is carrying on operations which at the present time consist of drilling past tools which have been stuck in the hole for many weeks. Total depth is 4,488 feet. The well is making an estimated 7,000,000 feet of gas per day, varying from 15 to 25 bbls. of oil.

Proration in Crane-Upton

Plans for prorating the Crane-Upton producing areas were made in August at the time when the Crane County fields were producing 34,165 bbls. daily from 286 wells, and the Upton County fields producing 7,870 bbls. daily from 280 wells. Crane and Upton Counties' wells then totaled 585 wells; they now total 624 wells. The Church-Fields-McElroy and Hurdle Pools were the main ones prorated in the two counties. Production from the pools in the two counties now runs around 27,500 bbls. per day, as per the proration allowable and pipe line nominations.

Leck Pool Extension

J. C. Maxwell and Atlantic Oil Producing Co.'s No. 1 Leck, 6 miles north of the Hendricks Pool, Winkler County, and an extension to the Leck Pool, came in for one of the best wells ever drilled in the county, completed for an initial of better than 13,000 bbls. per day at a total depth of 3,081 feet during the first week of September, drawing attention to this area which had lain dormant for many months. The well is located in Section 16, Block 74, and several other tests were drilled on offset acreage, but none of them showed up better than small wells, and the flare-up caused by this good well soon died down.

The Llano-Scarborough Pool, a few miles to the northeast of the Leck Pool in the same county, was given a three-quarters of a mile extension by Magnolia Petroleum Co.'s No. 1 Scarborough, in Section 1, Block 77, when it came in for around 100 bbls. daily at a total depth of 2960 feet. This pool has been quiet during 1930 also.

Hendricks' Steady Decline

The Hendricks Pool, Winkler County, has been on a gradual decline from a daily average of 88,130 bbls. in January, 1930, to the present daily average of 53,990 bbls., the pool doing its own prorating as it declines in production each week and month, with many of the wells being plugged as water encroachment finally displaces the oil.

Loving County Active

Loving County contained one of the most active pools in West Texas during the year and 20 high gravity oil producers were added to the pool, some of the best wells having been completed in the last half of 1930, extending the pool to the north, south and east, until it extends 4 miles in length and 3 miles in width, although the intervening acreage is not all drilled. This pool produces 39.5-42.0 gravity oil from the Delaware sand, and is the first "sweet" oil producing field to have been found in the district. There are 37 producing wells in the field making around 3,300 bbls. per day.

Midway between the Shipley or Hayzlett Pool and the Bennett Pool, southern Ward County, the Texas Pacific Coal & Oil Co.'s No. 1 Barker, in Section 27, Block 29, came in as a commercial producer at a total depth of 2,425 feet making an initial production of 170 bbls. per day from pay topped at 2,256 feet. The company is now drilling a direct offset in Section 5.

Busy in O'Brien Pool

The O'Brien Pool in northern Ward County was exceptionally active during the year, and several extensions were made in it, proving up more acreage and adding to its production. The largest extension of the year was made in the pool in November by the Magnolia Petroleum Co. when it completed its No. 1 George Sealy in the northeast quarter of Section 46, Block F, G.M.M.B.&A. Survey, about 4 miles west of the Gulf Production Co.'s O'Brien producers. Its first showing of oil was struck at 2,794-2,890 feet, and from 3,035-44 feet it was given a 30-quart shot, but this did not help it, so it was drilled deeper, encountering more oil, and at 3,065 feet it was completed for a small oil well, proving up more acreage to production in the pool.

Sid Richardson and others' No. 1 O'Brien in the northwest corner of Section 5 was another well which extended the pool and promised the linking of production of the northern and southern producing areas, making it appear as if the pool would extend 12 miles from north to south. This well had its first showing of oil from 2,555-62 feet with another from 2,585-98 feet and 2,615-31 feet and 2,660-70 feet, being completed at a total depth of 2,686 feet. The Gulf Production Co. and Richardson have drilled several good producers in the immediate area of the Richardson well, although the majority of them are small wells.

Wildcatting in Pecos County

Pecos County continued active in the past year, with many wildcats drilled. The Pecos Valley and Torborg Pools received the most attention. There are at present 41 producers in the Torborg Pool with a daily average of 1,435 bbls. This amount of oil does not seem enough for 41 producers, but these wells are exceptionally shallow, producing from depths ranging from 315 to 400 feet. The wells are usually small, but the lifting cost is nil, the oil is being sold at the wells for 50 cents per barrel, and the pool is not under proration, consequently companies owning the production have exceptionally profitable leases. This pool is slightly northwest of the Yates Pool.

The Yates Pool was prorated during the latter part of 1930 from 100,000 bbls. to 89,500 bbls. from 194 units of 80 acres each, the Shell Petroleum Corp. electing to take 19,503 bbls. daily, Gulf Production Co. 12,443 bbls., Illinois Pipe Line Co. 36,544 bbls. and Humble Oil & Refining Co. 21,000 bbls. per day. This new allowable went into effect for the period from December 5, 1930, to January 25, 1931. There are now 397 producers in the field. Drilling has been almost at a standstill during the year. The Humble Oil & Refining Co.'s casinghead gasoline plant is processing around 22,000,000 feet of gas per day, this plant being especially equipped to process the sulphur gas produced in the field.

The Magnolia Petroleum Co. opened a new area in October several miles southwest of the World Pool in Crockett County when its No. 2 Hoover, in Section 2, Block FF, B.&B. Survey, was completed for a small well at a total depth of 2,058 feet. This well is 2 miles southeast of a former test put down by the company in August of 1930. This dry test was abandoned at a total depth of 6,160 feet.

The McCamey or Hurdle Pool in Upton County has seen several wells drilled during the year, the Gulf Production Co.'s No. 1 King, in Section 28, Block 2, M.K. &T. Survey, standing as probably the most important, as it extended production approximately 2¼ miles to the northeast in the Shirk area. This well topped the pay at 2,693 feet and was completed at a total depth of 2,972 feet for a small well, but important in the fact that it was an extension well, proving up several hundred more acres to production in this part of the McCamey Pool.

Big Lake's Deep Wells

The Big Lake Field, Reagan County, has been an interesting area all year due to five deep wells being drilled in to production, and the tubing of the eight deep wells by their owners, the Big Lake Oil Co. and Group No. 1 Oil Corp. (Continental Oil Co.), respectively. A study was made of the field, especially of the deep producers, and the railroad commission ordered the deep producers tubed to cut down the oil-gas ratio to conserve a vast amount of sweet gas which it stated the wells were blowing into the air.

The Oklahoma Natural Gas Corp. will soon commence the laying of a 12-inch gas line from the Big Lake Field to San Angelo and an 8-inch gas line from the field to Rio Pecos, and is to take several million feet of the sweet gas from the deep producers in the field for domestic and commercial use for the towns to be served by the line, and in this manner will aid the Big Lake Oil Co. and Group No. 1 Oil Corp. in handling the surplus gas from the wells. There are three gasoline plants serving the field, but they have been unable to cope with the vast amount of gas produced, which has been around 165,000,000 feet per day.

A most interesting test was drilled by P. H. Williams on the Ash Ranch to a total depth of 8,900 feet, but failed to pick up any pay horizon and was plugged in October, 1930. This is said to have been the deepest test ever drilled by cable tools.

The McIntosh Pool was discovered in Runnels County in August, 1927, and three wells were drilled in the pool, but for the past two years only one of them has remained producing, having dwindled to 10 bbls. per day on the pump. The Vacuum Oil Co. and associates decided to plug the well as it was not paying for producing, but before plugging drilled it 4 feet deeper from 2,413 to 2,417 feet, the well showing a great comeback to around 200 bbls. per day.

New Production in Howard

The Sinclair Oil & Gas Co. opened a new producing area on the eastern side of Howard County in June, 1930, and two wells have been added to that new area since the discovery on the Dodge estate in Section 11, Block 30, Township 1s, T.&P. Railroad Survey. It was first completed for only 75 bbls. per day at 2,570 feet, but was later deepened to 2,798 feet and recompleted for a new initial of 175 bbls. per day.

Jones County Was Active

Jones County saw considerable activity during the year with one 1-mile extension in the Noodle Creek Pool by the C. R. Pope and others' No. 1 Swan in the southeast corner of the I. Miley Survey No. 281. It picked up the Noodle Creek pay at 2,516-17 feet and 2,534-35 feet and was completed at a total depth of 2,542 feet for an initial production of 750 bbls. per day.

Shaheen and Prairie Oil & Gas Co.'s No. 1 King, located in the M. Bueno Survey, a short distance west of the town of Hawley in Jones County, was a small wildcat discovery for the year, being completed for an initial production of 50 bbls. per day from pay topped at 1,994 feet. Total depth is 1,999 feet.

The Dunnigan-Shell Pool in Taylor

(Continued on Page 148)

New Southwest Texas Pools in 1930

Darst Creek the Outstanding Development, but Several Pools Were Opened in the Year That Were Not Developed

By B. D. Stevenson
Fort Worth Bureau, The Oil and Gas Journal

New pools accounted for a big increase in the production of crude oil in Southwest Texas during the year 1930. Not counting the Refugio Field which many include in Southwest Texas because of its being west of the salt dome area, production jumped from around 24,481,160 bbls. in 1929 to around 31,033,194 in 1930.

And at the close of the year there were about a dozen one-well pools of oil or gas where development awaits more or less a betterment of economic conditions, and no one knows what their potential will be once they are developed. By one-well pools is meant wildcat spots where a commercial gas or oil producer has been completed but where no subsequent development has followed.

On the whole it has been one of the busiest years Southwest Texas has known and quite as successful in the matter of finding new production. A very considerable mileage of new pipe lines has been laid, three new refineries built, a new cracking process added to a lub plant at Mirando City in the Laredo district and the first gasoline pipe line laid by the Magnolia which reaches 65 miles from Luling refinery to San Antonio.

Darst Creek with about 11,343,682 bbls. of oil to its credit for the year, is responsible for the biggest increase in Southwest Texas. The field was discovered late in 1929 but total production for that year was only 228,876 bbls. The real development of the field is a matter of 1930 history entirely. Darst Creek produces from the Edwards lime.

The Chapman Pool in Williamson County was an important discovery of 1930, and the Pettus Field in Bee County, which produced 1,662,007 bbls. from February to December inclusive, was another discovery of note.

Pools discovered late in 1929 but with development practically all confined to 1930, and which account for an appreciable amount of the crude production for the year, are Darst Creek in Guadalupe County in the Luling area and Escobas in Zapata County in the Mirando district. Due largely to the Escobas Pool, which is shallow production at around 1,250 feet, the Laredo district for the year shows an increase of a quarter of a million barrels for the year over the production for 1929.

New Producing Spots

In the flock of new producing spots that were brought in during the year, Evans & Gant's No. 1 Jeff Love in southwestern Kerr County ranks as one of the most important, though it was not fully completed when the old year died. The well is about 3,400 feet deep and had one sand at 2,552 feet and the second at around 3,374 feet with the top of the Pennsylvanian uncertain but carried by different operators all the w from 1,100 feet down to 1,460 feet. B there seems no question but that it Pennsylvanian and the first sand at 2,5 feet which made a small amount of is classed by old time practical oil m from the state of Pennsylvania as R Injun and the second as the Little Bere There is a chance that both these sand may ultimately be proven productive a that deeper drilling will find other o more prolific sands. The oil is a gree colored paraffin oil of about 40 gravit Some new locations have been made a 1931 may see some important develo ments.

In this territory in years past oil m have been chiefly notable for their a sence. Thirty miles or so east R. P Sterling drilled the No. 1 Willie Werne in Kendall County in about the cent of the county and completed a small w

(Continued on Page 225)

SOUTHWEST TEXAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BRANYON—													
Daily average	21	21	20	21	24	32	38	25	22	23	22	21	
Month	666	595	637	623	747	966	1,162	779	651	721	665	659	
BROOKS—													
Daily average		9											
Month		238											
BUCHANAN—													
Daily average	18	40	94	414	255	268	204	176	232	146	142	133	
Month	560	1,127	2,913	12,423	7,905	8,051	6,333	5,454	6,955	4,542	4,250	4,127	
BRUNER—													
Daily average	27,214	25,529	23,773	20,464	20,134	23,487	22,848	17,574	16,172	15,764	15,130	15,111	
Month	843,657	714,810	736,953	613,919	624,163	704,603	708,285	544,797	485,162	488,674	453,897	468,439	
DALE—													
Daily average	432	381	368	348	348	337	326	285	375	302	316	291	
Month	13,392	10,682	11,408	10,438	10,793	10,111	10,110	8,843	11,258	9,355	9,470	9,029	
DARST CREEK—													
Daily average	13,591	16,037	16,333	18,183	22,422	24,298	39,431	52,524	47,234	49,043	35,987	36,452	
Month	421,314	449,029	506,328	545,470	695,067	728,931	1,222,362	1,628,229	1,417,016	1,520,321	1,079,613	1,130,002	
KINGSVILLE—													
Daily average	187	160	127	128	113	114	119	135	126	120	118	117	
Month	5,801	4,466	3,926	3,836	3,490	3,416	3,685	4,198	3,782	3,719	3,530	3,627	
LARREMORE—													
Daily average	112	91	102	54	31	35	31	30	30	33	26	18	
Month	3,474	2,541	3,152	1,622	974	1,059	968	932	900	1,014	789	555	
LULING—													
Daily average	9,207	9,543	9,727	9,569	9,804	9,673	9,505	9,770	9,818	9,292	8,975	8,399	
Month	285,411	267,211	301,547	287,065	303,918	290,179	294,642	302,878	294,544	288,045	269,248	291,370	
LYTTON SPRINGS—													
Daily average	824	872	855	821	862	838	781	783	765	767	771	817	
Month	25,553	24,409	26,519	24,631	26,734	25,133	24,255	24,268	22,944	23,477	23,134	25,322	
MANFORD—													
Daily average	280	577	627	847	506	431	361	315	303	279	263	223	
Month	8,666	16,170	19,435	25,405	15,675	12,930	11,180	9,780	9,099	8,634	7,899	6,914	
McMULLEN COUNTY—													
Daily average	42	38	36	38	35	34	33	33	31	17	26	18	
Month	1,314	1,057	1,120	1,190	1,085	1,022	1,032	1,020	923	525	775	558	
MEDINA COUNTY—													
Daily average	24	22	22	24	21	22	22	22	22	22	22	22	
Month	744	616	682	709	682	654	682	682	660	682	660	681	
MIRANDO—													
Daily average	9,357	8,946	8,425	8,747	10,440	11,024	11,315	11,342	12,084	14,140	14,383	14,318	
Month	290,059	250,489	261,167	262,406	323,634	330,716	350,763	351,612	362,527	438,350	431,500	443,852	
PETTUS—													
Daily average		54	667	1,164	3,022	4,542	4,807	6,213	9,624	7,848	8,223	8,215	
Month		1,498	20,664	34,930	93,679	136,259	149,030	192,590	288,713	243,297	246,676	254,671	
SOMERSET—													
Daily average	1,733	1,670	1,590	1,535	1,575	1,582	1,554	1,543	1,514	1,479	1,455	1,381	
Month	53,732	46,774	49,295	46,038	48,812	47,465	48,157	47,845	45,419	45,863	43,661	42,812	
STAR—													
Daily average		25	16										
Month		693	494										
CHAPMAN—													
Daily average						3,511	7,287	9,251	9,203	10,588	5,486	4,052	
Month						105,326	225,891	286,767	276,082	328,235	164,571	125,626	
SAXET—													
Daily average								54	76	59	57	61	
Month								1,676	2,281	1,818	1,717	1,881	
BEXAR—													
Daily average										58	186	266	
Month										1,792	5,588	8,245	
DUVAL—													
Daily average										217	229	172	
Month										6,741	6,861	5,329	
MINERAL—													
Daily average									3	24			
Month									100	740			
NORMANNA—													
Daily average									10	28	32	26	
Month									300	890	949	801	
AQUA DULCE—													
Daily average												2	
Month												47	
TAYLOR—													
Daily average			253	183	488								
Month			7,858	5,500	15,132								
YOAST—													
Daily average	866	767	758	571	513	484	411	359	327	309	278	265	
Month	26,831	21,490	23,486	17,125	15,915	14,520	12,753	11,118	9,820	9,580	8,351	8,211	
Daily average	63,908	64,782	63,793	63,111	70,593	80,712	99,073	110,434	107,971	110,548	92,127	91,380	
Total 1930	1,981,174	1,813,895	1,977,584	1,893,330	2,188,405	2,421,341	3,071,290	3,423,468	3,239,136	3,427,015	2,763,804	2,832,752	
Total 1929	1,453,427	1,527,677	2,021,412	2,199,207	2,413,599	2,424,277	2,349,745	2,350,867	2,148,828	2,029,702	1,818,328	1,744,091	
Total 1928	825,036	789,190	839,945	807,553	804,627	774,570	804,643	820,468	844,550	892,350	912,608	1,168,912	
Total 1927	1,245,673	1,075,312	1,167,584	1,112,760	1,092,233	1,020,180	1,005,733	985,149	959,850	923,242	868,290	878,502	
Total 1926	1,233,397	1,100,720	1,220,842	1,176,630	1,208,163	1,062,020	1,303,333	1,425,690	1,371,420	1,368,092	1,284,180	1,278,502	

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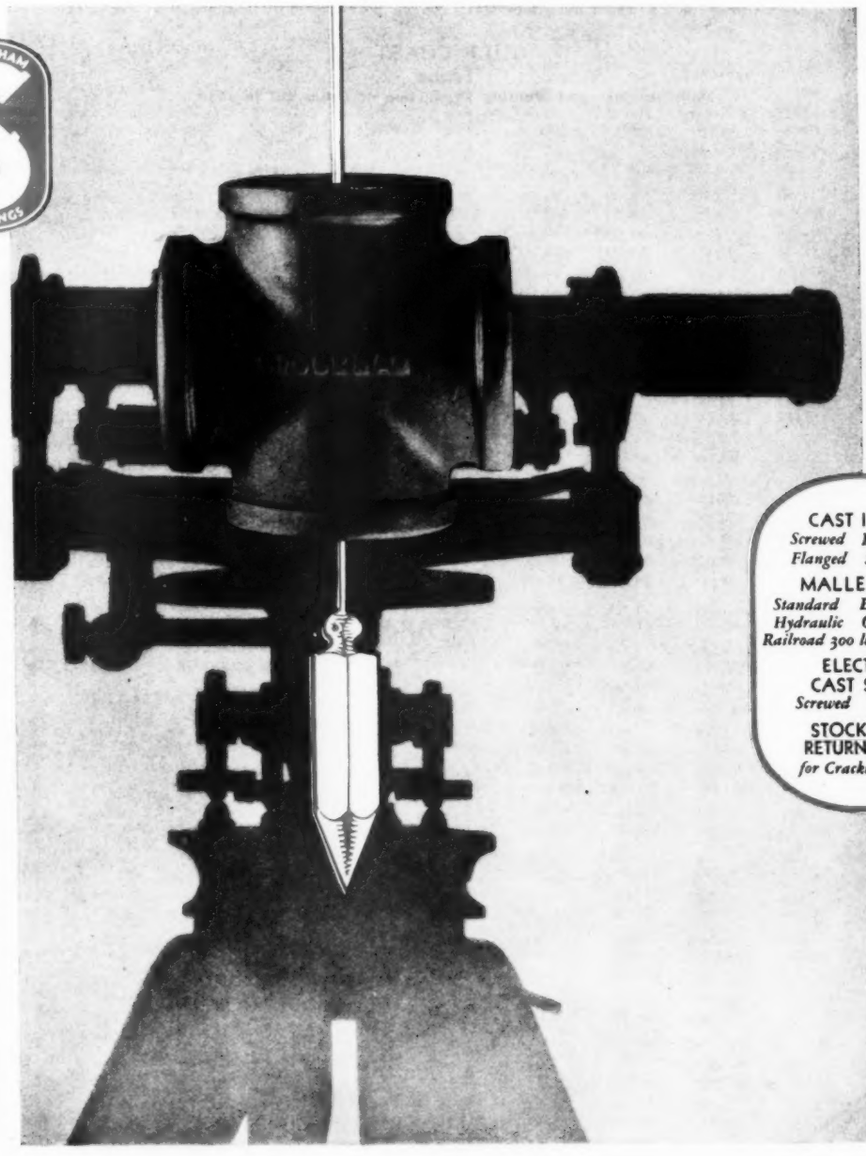

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Gulf Coast's New Production Record

So Many Big Pools Came In in 1930 That Drilling Operations Were Cut Down. New Pools Opened and Others Extended

By Neil Williams
Staff Correspondent, Gulf Coast Fields

Coming in like a lion, the past year on the Gulf Coast went out like a lamb. The closing months were marked by a general slackening of operations and declining production enforced by drastic curtailment programs and sharp reductions in crude prices. In contrast was the early part of the year when several major fields were on the horizon, adding rapidly mounting daily production figures, and with an intensive drilling play not only in these particular fields but in the development of numerous semiproved areas and wildcat prospects. The threat which the Gulf Coast at first presented subsided into a period of comparative inactivity and retrenchment consistent with general conditions.

Local Proration

Due to the peculiarity of its fields, the Gulf Coast was not placed under any direct proration orders as were those which governed the greater part of Texas, and coastal Louisiana was not directly affected by the Texas program, yet it was left with operators of the Texas Gulf Coast to bring their daily production down to a quota of approximately 150,000 bbls. Faced with the possibility of state-enforced proration in the event of failure to bring production down to requirements, coastal operators put into practice a drilling curtailment program, limiting drilling to outside and obligated tests and choking all new wells to a maximum initial flow of 500 bbls.

A New Production Record

The decline in production came too late to prevent coastal fields from setting a new record in output for the year. With a total yield for 1930 of 71,200,514 bbls., the output of 1929, which until now was the greatest year in the history of the coast, was exceeded by 13,098,669 bbls. The real drop in output did not begin until well along in August and by that time such flush fields as Refugio, Barbers Hill and the deep areas of Humble piled up such gains over the preceding year that declines following curtailment of operations were not sufficient to offset the earlier increases.

It was those three fields which figured chiefly in field developments and production for the year. Refugio, which was opened for oil production only as late as the middle of 1929, was not considered generally of any consequence except for gas, until late that year. Then the field was extended into the townsite of Refugio and there followed in the earlier months of 1930 a town lot drilling boom which sent the daily output to as high as 43,000 bbls. This came chiefly fr[om] a 3,700-foot sand development but ab[out] the same time a deep sand at 5,400-5,[500] feet was discovered on the east side [of] the field and later a still deeper sa[nd] around 6,400 feet which have served [to] prevent anything except just a ste[ady] decline in the field's daily output sin[ce] the proving up of the shallow 3,700-f[oot] sand.

With the cessation of work in t[he] 3,700-foot sand, drilling shifted to t[he] 5,400-5,500-foot sand. This horizon w[as] steadily extended over a wide area bori[ng] ing the east and south sides of the tow[n] site and the 3,700-foot field but prod[uc] tion was not as prolific nor completi[ons] as frequent as in the older and shallow[er] field.

The principal activity at Refugio at t[he] close of the year was centered in the dee[per]

GULF COAST
Texas
Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
ALLEN—													
Daily average	10	100	73	59	34	36	47	38	35	222	87	93	
Month	296	2,805	2,249	1,772	1,065	1,087	1,449	1,200	1,057	6,880	2,611	2,899	23
BARBERS HILL—													
Daily average	22,286	23,828	26,296	23,315	20,137	22,375	18,824	17,876	18,035	20,769	21,453	23,588	
Month	690,878	667,177	815,165	699,458	624,237	671,240	583,546	554,161	541,054	643,847	643,595	731,239	7,96
BATSON—													
Daily average	1,242	1,174	1,212	1,205	1,219	1,199	1,164	1,098	1,116	1,107	1,082	1,082	
Month	38,483	32,858	37,584	36,157	37,780	35,961	36,079	34,050	33,468	34,320	32,464	33,551	42
BIG CREEK—													
Daily average	5,436	3,861	2,956	3,263	3,880	4,287	4,034	4,133	3,474	3,824	3,458	3,484	
Month	168,513	108,122	91,625	97,915	120,288	128,599	125,060	128,119	104,213	118,530	103,769	108,003	1,40
BLUE RIDGE—													
Daily average	1,922	1,934	1,916	1,862	1,892	1,983	1,609	1,723	2,019	1,807	1,626	1,533	
Month	59,580	54,159	59,390	55,870	58,652	59,499	49,893	53,420	60,558	56,025	48,784	47,520	66
BRENHAM—													
Daily average	139	131	121	141	146	153	168	146	138	137	112	145	
Month	4,312	3,675	3,742	4,215	4,515	4,580	5,195	4,538	4,130	4,255	3,373	4,481	51
BOLING—													
Daily average	1,077	1,040	346	1,153	1,095	1,091	1,130	1,051	1,016	971	929	881	
Month	33,388	29,117	10,724	34,590	33,938	32,733	35,039	32,591	30,472	30,086	27,857	27,328	35
CLAY CREEK—													
Daily average	1,730	1,597	1,566	1,559	1,640	1,640	1,485	1,457	2,197	2,777	1,456	1,425	
Month	53,631	44,709	48,546	46,758	50,825	49,199	46,047	45,153	65,920	86,071	43,668	44,180	62
DAMON MOUND—													
Daily average	475	514	546	537	662	681	686	569	678	685	683	624	
Month	14,710	14,378	16,937	16,115	20,537	20,418	21,263	17,641 *	20,349	21,230	20,490	19,343	22
DEWALT—													
Daily average	12,067	12,157	10,533	10,381	11,942	11,979	12,057	11,978	12,051	11,987	12,002	11,973	
Month	374,077	340,390	326,511	311,427	370,211	359,377	373,726	371,300	361,546	371,903	360,067	371,154	4,21
ESPERSON (SHEEKS)—													
Daily average	614	794	1,933	3,244	2,782	1,999	2,308	2,558	3,004	3,032	3,000	3,076	
Month	19,046	22,241	59,935	97,309	86,227	59,969	71,564	79,299	90,110	93,995	89,999	95,364	86
FANNETT—													
Daily average	1,723	1,190	1,271	1,099	1,082	772	844	841	679	650	621	525	
Month	53,410	33,327	39,400	32,981	33,544	23,163	26,154	26,060	20,383	20,135	18,630	16,266	34
GOOSE CREEK—													
Daily average	5,060	4,931	4,473	4,814	4,430	4,668	4,650	4,542	4,557	4,568	4,377	4,522	
Month	156,863	138,069	138,682	144,440	137,354	140,050	144,135	140,812	136,704	141,616	131,312	140,174	1,69
HANKAMER—													
Daily average	436	29	56	989	1,598	2,790	2,485	2,440	1,699	1,543	2,020	2,195	
Month	13,520	819	1,730	29,675	49,550	83,702	77,036	75,631	50,984	47,846	60,589	68,041	55
HIGH ISLAND—													
Daily average	1,550	1,349	929	1,771	1,515	1,247	913	912	785	895	733	821	
Month	48,056	37,777	28,795	53,133	46,965	37,418	28,303	28,259	23,561	27,755	21,983	25,464	40
HULL—													
Daily average	9,952	8,893	8,310	8,780	9,990	9,490	8,552	8,261	8,558	7,575	8,086	7,522	
Month	308,517	248,997	257,618	263,399	309,675	284,688	265,105	256,085	256,743	234,824	242,585	233,200	3,16
HUMBLE—													
Daily average	12,923	15,952	14,905	17,768	16,488	14,465	18,248	20,997	19,440	15,638	13,434	12,548	
Month	400,625	446,656	462,060	533,036	511,135	433,937	565,684	650,910	583,200	484,771	403,031	388,990	5,86
JASPER COUNTY—													
Daily average	25	25	25	24	20	20	20	24	25	25	22	15	
Month	775	700	775	725	620	600	620	735	750	775	653	472	1
LOST LAKE—													
Daily average	747	758	699	638	793	464	362	579	631	480	407	352	
Month	23,154	21,210	21,666	19,130	24,583	13,917	11,213	17,947	18,918	14,889	12,223	10,905	20
MARKHAM—													
Daily average	340	326	267	324	320	347	326	307	332	210	203	204	
Month	10,552	9,135	8,290	9,708	9,928	10,400	10,122	9,516	9,948	6,494	6,093	6,317	18
MOSS BLUFF—													
Daily average	18	.....	.....	.....	.....	.....	111	.....	67	109	114	88	
Month	570	.....	.....	.....	.....	.....	3,446	.....	2,016	3,381	3,410	2,720	15
MYKAWA—													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	40	192	275	208	
Month	.....	.....	.....	.....	.....	.....	.....	.....	1,212	5,960	8,243	6,462	21
NASH—													
Daily average	510	401	306	314	302	308	300	291	286	282	229	248	
Month	15,820	11,221	9,487	9,413	9,348	9,241	9,297	9,012	8,595	8,734	6,869	7,688	11
NORTH DAYTON—													
Daily average	1,694	1,175	740	641	582	2,801	1,875	1,352	1,041	1,353	1,172	1,122	
Month	52,515	32,914	22,938	19,232	18,044	84,025	58,137	41,925	31,221	41,932	35,151	34,775	42
ORANGE—													
Daily average	2,611	2,569	2,821	2,446	2,386	2,230	2,122	2,079	2,181	2,122	2,006	2,089	
Month	80,945	71,918	87,450	73,379	73,962	66,891	65,781	64,447	65,424	65,764	60,188	64,758	84
ORCHARD—													
Daily average	79	74	1,506	1,887	1,835	2,814	2,283	2,238	2,178	1,889	2,215	1,916	
Month	2,436	2,079	46,696	56,601	56,875	84,409	70,774	69,366	65,351	58,563	66,457	59,408	63
PIERCE JUNCTION—													
Daily average	12,299	11,089	10,860	10,631	9,430	13,303	11,378	12,872	11,209	10,655	9,970	9,630	
Month	381,277	310,485	336,659	318,925	292,324	399,096	352,719	399,019	336,278	330,314	299,106	300,088	4,16
PORT NECHES—													
Daily average	2,470	1,784	2,000	1,845	1,677	1,443	1,787	1,876	1,464	1,498	1,382	1,183	
Month	76,563	49,945	62,000	55,335	52,009	43,298	55,403	58,163	43,920	46,438	41,464	36,563	67

(Table Continued on Next Page)

ing of older wells and holes to the ver 6,400-foot horizon. However, it not anticipated that this production ll ever prove the menace of that pre- ted early in the year from the 3,700- et sand.

A little interest started up at the close the year in a new area about a mile st of the Refugio Field, where L. L. mith completed a wildcat producer in s No. 1 Power from the 3,700-foot hori- n. This extension necessitated several ffsets, only one of which has reached e pay. That well, however, flowed a short time, going to water, and w is being deepened.

Development of Barbers Hill

Continued development at Barbers Hill the deep sands flanking the sides of e dome, accounted for the rapid in- ase in daily output of that field the rly part of the year. With the proving of a solid line of production skirting entire east and south flanks, the open- of new pools on the northwest, north, st and southwest flanks caused shifts activity to those areas with the re- lt that, except for a few short un- bridled gaps, a line of producing wells now circles the dome.

Outstanding at Barbers Hill, as well as for the entire Gulf Coast, was the proving of an overhanging ledge of cap rock and salt completely circling the dome and the exploration for producing sands flanking the dome and underlying the ledge. This finding of prolific production under the salt has revolutionized to a large extent previous theories of salt dome formation. That many other domes, if not all of them, are similarly formed is the belief of some operators and possibly the chief exploration of the early future will be directed toward finding oil in the sands underlying such ledges, if they exist. Barbers Hill now has a long list of prolific wells which have drilled through thick protrusions of salt or cap rock. Efforts of operators at this dome in the last few months almost entirely have been centered on moving up on the previously condemned cap rock area and drilling through the salt rather than trying to move off the salt to find the deep sands.

That other domes may be similarly formed also has been indicated in the last few months at Allen Dome, Brazoria County, where Mills Bennett Production Co., following discoveries at Barbers Hill, drilled a test, No. 1 Poole, up on the cap rock, on the southeast side, drilled through 736 feet of cap rock at 1,530-2,086 feet, went back into formation again and made a well in a sand at 4,374 feet. Since then two other tests at Allen, located on the basis of this theory, have drilled through cap rock and salt, one being on the southeast and the other on the northwest side. At this writing both were still drilling in formation.

At Barbers Hill some of the tests have had to penetrate hundreds of feet of salt, one, Humphreys Corp.'s No. 1 Fitzgerald, drilling through 1,821 feet before going back into formation.

Extending Producing Area

Previous to this year, deep production on the flanks had been developed only on the east and south sides. Early in January Humphreys Corp.'s No. 8-A Kirby on the extreme northwest came in flowing 8,905 bbls. in the first 24 hours from sand at 6,416 feet. This well which, at times flowed as high as 12,000 bbls., has proved one of the best wells yet completed at Barbers Hill. There previously had been some shallow sand wells in this area but this was the first deep well there or anywhere except on the east and south sides. As the acreage there is owned entirely by Humphreys Corp., drilling has been controlled but during the year four additional deep wells were completed, extending the production in a line to the northward and southward around the dome. A short time later, Yount Lee Oil Co. on the extreme southwest flank of the dome brought in another deep wildcat, its No. 1 Zadie Fisher, flowing 2,085 bbls. in the first day from sand at 6,661 feet. This area, however, was split up among several operators and following the completion of the well a series of tests were started there, out of which four have made wells. On the extreme north, Humphreys Corp.'s No. 1 Morgan opened production in a sand at 6,404 feet. This well failed to hold up a great length of time and eventually was deepened and

(Continued on Page 146)

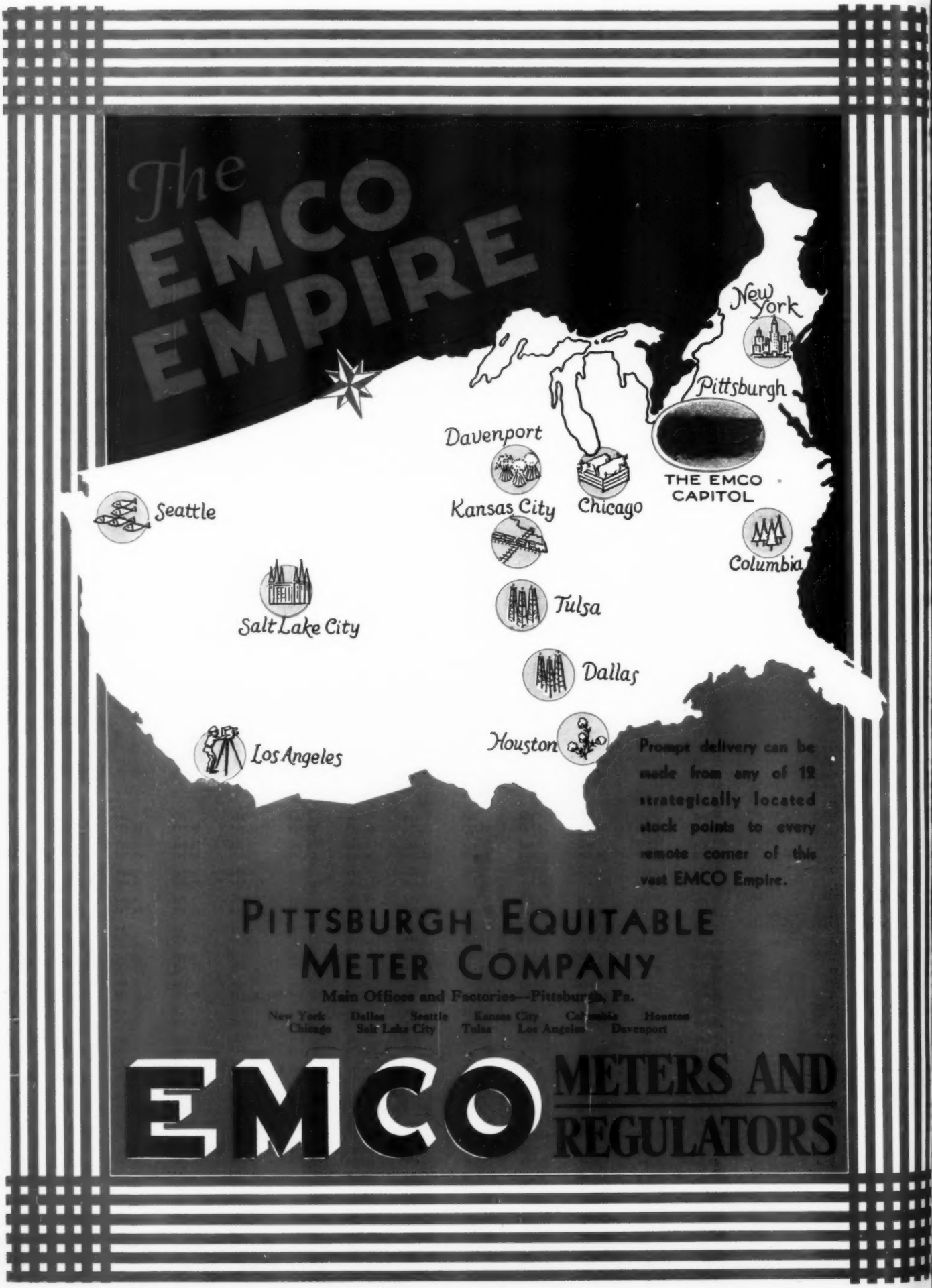
GULF COAST
(Texas Continued)

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
RACCOON BEND—													
Daily average	10,544	11,936	10,277	9,928	11,884	12,004	11,692	12,015	12,045	9,534	8,753	8,865	
Month	326,878	334,194	318,592	297,848	368,415	360,128	362,460	372,475	361,346	295,552	262,577	274,827	3,935,292
REFUGIO—													
Daily average	24,228	36,274	38,453	39,487	37,265	35,214	34,358	29,322	28,880	26,463	26,212	28,722	
Month	751,063	1,015,680	1,192,052	1,184,615	1,155,213	1,056,418	1,070,679	908,972	866,394	820,351	786,372	890,393	11,698,202
SARATOGA—													
Daily average	1,001	1,003	1,008	1,052	1,048	1,065	1,098	1,165	1,261	1,350	1,307	1,291	
Month	31,040	28,098	31,250	31,572	32,488	31,961	34,039	36,129	37,829	41,859	39,204	40,034	415,503
SOUR LAKE—													
Daily average	2,404	2,304	2,209	2,193	2,372	2,326	2,340	2,205	2,194	2,232	2,173	2,132	
Month	74,529	64,519	68,491	65,780	73,527	69,769	72,544	68,368	65,814	69,208	65,185	66,095	823,829
SOUTH LIBERTY—													
Daily average	6,977	5,892	4,743	4,622	4,433	4,433	4,091	3,663	3,279	2,152	3,007	2,790	
Month	216,270	164,983	147,020	138,645	137,425	132,985	126,823	113,539	98,358	97,728	90,212	86,489	1,550,477
SPINDLETOP—													
Daily average	18,941	17,976	16,322	13,604	16,812	17,659	18,148	17,308	16,291	15,880	14,297	13,977	
Month	587,174	503,328	505,970	408,120	521,184	529,764	562,600	536,555	488,728	492,296	428,909	433,285	5,997,913
WEST COLUMBIA—													
Daily average	6,285	6,205	5,605	6,058	5,747	5,705	5,534	4,476	4,133	4,176	4,464	4,675	
Month	194,826	173,731	173,763	181,737	178,156	171,135	171,558	138,759	124,009	129,463	133,920	144,933	1,915,990
Daily average	169,815	179,266	175,283	177,633	177,438	182,989	177,209	172,392	167,018	159,799	153,368	155,594	170,584
Total Texas Gulf Coast	5,264,292	5,019,416	5,433,792	5,329,015	5,500,599	5,489,657	5,493,493	5,344,156	5,010,543	4,953,793	4,601,043	4,823,409	62,263,208

Louisiana

BASE LA BUTTE—													
Daily average	945	47	36	39	37	33	32	32	32	32	26	47	
Month	1,395	1,330	1,116	1,162	1,147	990	992	992	960	992	785	1,448	13,309
BAYOU BLUE—													
Daily average	44	119	72	89	77	63	89	152	69	44	128	60	
Month	1,365	3,339	2,238	2,681	2,370	1,902	2,762	4,717	2,078	1,347	4,137	1,844	30,780
BAYOU BOUILLON—													
Daily average	67	38	660	720	200	90	113	513	146	256	142	127	
Month	2,088	1,061	20,447	21,619	6,216	2,687	3,509	15,907	4,381	7,931	4,249	3,925	94,020
BLACK BAYOU—													
Daily average	45	384	87	82	243	722	566	484	375	539	1,193	1,048	
Month	1,396	10,743	2,700	2,455	7,523	21,685	17,545	15,005	11,235	16,708	35,800	32,478	175,273
BULLOU ISLAND—													
Daily average	59	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	1,841	798	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,639
CAGERLY—													
Daily average	841	577	480	558	531	634	566	437	409	473	386	388	
Month	26,056	16,164	14,879	16,743	16,462	19,031	17,530	13,550	12,268	14,662	11,572	12,036	190,953
CANNINGS—													
Daily average	1,816	1,146	825	929	819	1,844	2,385	2,096	2,790	2,046	1,657	1,700	
Month	56,316	32,095	25,581	27,873	25,401	55,328	73,923	64,985	83,689	63,440	49,703	52,692	611,020
CKBERRY—													
Daily average	3,257	3,045	3,818	3,652	3,396	2,982	3,384	3,719	3,598	3,195	3,167	4,170	
Month	100,956	85,263	118,373	109,573	105,287	89,469	104,889	115,278	107,951	99,051	94,996	129,273	1,260,359
LAKE BARRE—													
Daily average	276	246	804	1,311	852	718	1,126	1,249	1,075	1,338	2,307	2,025	
Month	8,541	6,874	24,911	39,318	26,410	21,532	34,896	38,704	32,249	41,491	69,219	62,789	406,934
LAKE PELTO—													
Daily average	282	203	208	195	199	177	109	120	92	61	90	99	
Month	8,745	8,684	6,437	5,844	6,157	5,299	3,362	3,712	2,772	1,903	2,715	3,061	55,691
LECKPORT—													
Daily average	3,070	3,201	2,706	2,786	2,798	2,774	3,001	2,845	2,579	3,137	4,127	4,149	
Month	95,172	89,639	83,882	83,570	86,747	83,225	93,037	88,207	77,368	97,256	123,822	128,615	1,130,540
LITTLE BARRE—													
Daily average	821	1,869	1,693	1,982	2,207	3,491	3,556	3,804	3,296	3,059	2,477	2,020	
Month	25,458	52,332	52,489	59,464	68,424	104,728	110,240	117,923	98,870	94,842	74,309	62,605	921,684
LORENTO—													
Daily average	108	92	90	128	159	186	115	78	71	65	65	49	
Month	3,360	2,569	2,806	3,831	4,940	5,573	3,578	2,433	2,140	2,015	1,950	1,506	36,701
MARKS—													
Daily average	626	464	423	470	466	491	578	681	707	684	667	658	
Month	19,404	12,992	13,106	14,106	14,454	14,738	17,932	21,112	21,204	21,202	20,010	20,410	210,670
SULPHUR—													
Daily average	4,066	5,594	3,443	4,256	5,282	3,704	4,046	3,344	2,946	3,001	3,064	2,449	
Month	126,050	156,625	106,731	127,675	163,723	111,130	125,425	103,675	88,385	93,040	91,925	75,933	1,370,317
SWEET LAKE—													
Daily average	22	21	99	120	107	105	104	1,022	1,173	1,147	1,152	1,150	
Month	685	560	3,072	3,598	3,307	3,150	3,233	31,675	35,184	35,580	34,555	35,672	190,271
VINTON—													
Daily average	3,897	3,790	5,726	3,830	3,924	4,881	5,536	6,189	6,517	7,033	5,311	5,140	
Month	120,798	106,113	177,503	114,905	121,655	146,432	171,643	191,856	195,522	218,002	159,335	159,361	1,883,125
WELSH—													
Daily average	204	185	119	175	163	147	135	125	116	120	121	111	
Month	6,329	5,166	3,691	5,243	5,049	4,420	4,198	3,872	3,486	3,671	3,630	3,457	52,212
WHITE CASTLE—													
Daily average	363	375	371	380	512	1,122	1,225	1,198	1,142	1,082	1,061	1,028	
Month	11,248	10,507	11,511	11,392	15,869	33,672	37,962	37,124	34,258	33,549	31,836	31,880	300,808
Daily average	19,909	21,424	21,660	21,702	21,972	24,166	26,666	28,088	27,133	27,312	27,151	26,418	24,485
Total Louisiana Gulf Coast	617,197	599,854	671,473	651,052	681,141	724,991	826,656	870,727	814,000	846,682	814,548	818,985	8,937,306
TOTAL GULF COAST:													
Daily average	189,731	200,696	196,948	199,335	199,410	207,155	203,875	200,480	194,151	187,111	180,519	182,012	195,069
Month	5,881,489	5,619,270	6,105,265	5,980,067	6,181,740	6,214,648	6,320,149	6,214,883	5,824,543	5,800,475	5,415,591	5,642,394	71,200,514
Total 1929	4,344,233	3,959,613	4,586,507	4,705,904	4,673,923	4,484,434	4,749,161	4,956,783	5,007,570	5,486,792	5,591,438	5,554,487	58,101,845
Total 1928	3,801,990	3,629,891	3,836,765	3,760,420	4,155,534	4,125,977	4,378,872	4,188,943	3,948,578	3,842,655	3,996,644	4,200,073	47,868,342
Total 1927	5,232,366	4,409,580	4,837,581	4,420,560	4,762,127	4,612,620	4,432,535	4,301,901	4,258,890	4,379,432	4,176,450	4,350,044	54,174,086
Total 1926	3,023,877	2,820,608	3,034,683	2,842,056	3,208,721	3,849,970	3,785,069	5,287,019	5,655,960	5,433,029	5,285,730	5,570,607	48,866,575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Natural Gas Industry Developments

AMERICAN NATURAL GAS CORPORATION STATEMENT

Consolidated income statement of American Natural Gas Corp. and subsidiary companies show that gross revenues, including other income amounted to $10,874,828 for the year ended November 30, 1930, compared with $11,031,753 for the preceding 12 months, a decrease of $156,925. Operating expenses and general taxes totaled $6,172,217, as against $6,454,367, a decrease of $282,149. Gross corporate income of $4,702,611 represented an increase of $125,224 over the 12 months ended November 30, 1929.

After all deductions of subsidiary companies, including depreciation and depletion, there remained for the year ended November 30, 1930, a balance of $1,408,-777, which compares with $727,199 interest paid or accrued on American Natural Gas Corp.'s funded debt. After interest paid or accrued on the corporation's unfunded debt and miscellaneous deductions, there was a balance of $575,737 available for preferred stock dividends. This sum compares with dividends paid or accrued, totaling $349,860, on the 87 cumulative convertible preferred stock of American Natural Gas Corp. The consolidated income account shows that the interest charges on the corporation's 6½ per cent sinking fund gold debentures for the 12 months ended November 30, 1930, were earned 1.93 times and that the dividends on the $7 preferred stock were earned 1.94 times.

ATLANTIC GAS COMPANY INTO NEW CORPORATION

Expansion of the Atlantic Gas Co. into a new corporation to be known as National Public Utilities Corp., was announced in Philadelphia by N. H. Gellert, president. Through an exchange of securities the new corporation has also acquired the Great Lakes Utilities Corp. The corporation's main offices will continue to be in Philadelphia.

National Public Utilities Corp. will have assets of over $7,000,000 and gross earnings of over $1,000,000. It will operate through 19 subsidiary companies, serving either manufactured or natural gas to a population of approximately 37,000 in 44 communities in 11 states. The subsidiaries which the corporation will operate are as follows: Maryland—Easton Gas Co., Grisfield Light & Power Co., Chestertown Gas Co. and Havre de Grace Gas Co.; Pennsylvania—Berwick Gas Co. and Williamstown Gas Co.; New York—Fulton Fuel & Light Co.; North Carolina—Elizabeth & Suburban Gas Co., Henderson & Oxford Gas Co.; South Carolina—Rock Hill Gas Co.; Ohio—Ohio Gas Light & Coke Co.; Michigan—Gas Corp. of Michigan; Illinois—Easton Gas Co. and Rochelle Gas Co.; Indiana—Independence Gas Co. and Peoples Light & Power Co.; Nebraska—Citizens Gas Co.; South Dakota—Watertown Gas Co.

Management of the new corporation will be in the hands of Albert E. Pierce and Co. Omar P. Stelle, executive vice president of that company, has been elected chairman of the board of National Public Utilities Corp. N. H. Gellert, who was formerly president of Atlantic Gas Co., will continue as president of the new corporation.

GAS TO CHICAGO THIS YEAR

CHICAGO, Jan. 26.—Natural gas from Texas will be available to Chicago consumers before the end of 1931, the quarterly report of the People's Gas, Light & Coke Co. states. Pipe lines have been under construction for many months, and present engineering schedules are maintained the company hopes to have natural gas on tap by September 30.

JACKSON, MISSISSIPPI, AS SOURCE OF SUPPLY

HOUSTON, Tex., Jan. 26.—Formal announcement is made that the United Pipe Line Corp., a unit of the United Gas System, of this city, has acquired that part of the natural gas lines of the Southern Natural Gas Corp. extending from the main line of the latter company at a place north of Jackson, Miss., to Mobile, Ala. The purchase includes branch lines to Bogalusa, La., Canton, Laurel, Hattiesburg, Gulfport and Biloxi, Miss. In addition, a deal is under way for the purchase of a further extension of this line from Mobile to Pensacola, Fla.

The principal source of supply for this system will be the Jackson, Miss., field, where the United Gas Corp. has acquired substantial holdings. An additional source of supply is available, however, from the Monroe, Richland and East Carroll Fields of northeast Louisiana, this gas to be delivered by the Southern Natural Gas Corp. through its line out of those fields to the United Pipe Line Corp. at Jackson in the event of necessity.

The deal is of benefit to the Southern Natural Gas Corp. in that gas supplies of the United Gas Co. in northeast Louisiana and other areas are made available to the Southern Natural Gas Corp. for its remaining gas lines.

W. Re. BROWN IS NOW WITH BURNER COMPANY

W. Re. Brown, well known among natural gas men and former editor of "Natural Gas," is now located in Texas, having taken over the distribution of the Mettler burners in the southwestern natural gas territory. Mr. Brown has had many years' experience in gas appliance merchandising, having been new business manager of the Ohio Fuel Gas Co. for 14 years, in charge of industrial and domestic gas sales.

R. F. Cathcart, for many years in charge of the southwestern territory for the Mettler Co., has resigned to devote all his time to personal business interests. Br. Brown is now visiting the natural gas men in Louisiana, Arkansas and Texas, and will probably establish headquarters at Houston, Tex.

QUEBEC NATURAL GAS AREA

WASHINGTON, D. C., Jan. 24.—Surveys indicating the existence of natural gas and oil in sufficient quantities for commercial purposes have resulted in the taking up of claims on 500 square miles of land along the south shore of the St. Lawrence River between St. Hyacinthe, Quebec, and a point opposite Three Rivers, Quebec, according to a report of the Department of Commerce from the American Vice Consul at Montreal.

The possibility of finding natural gas in this region has long been realized, the department was advised, and a number of attempts have been made to carry out oil operations. One well is reported to have been sunk in 1885, from which natural gas is still being secured. No work has yet been commenced by any of the companies with present holdings, but it is expected that some operations will be started in the spring.

APPALACHIAN GAS SALES

Appalachian Gas Corp. reports gain in sales of natural gas for the 11-month period ended November 30, 1930, of 4,-095,712,527 feet over the corresponding period of 1929, during which time four of the companies now within the group were not in operation. Total sales to November 30, 1930, were 18,633,069,900 feet, against 14,537,357,373 feet.

SURVEY RIGHT OF WAY FOR BIG LAKE GAS LINE

FORT WORTH, Tex., Jan. 26.—The Natural Gas Engineering Corp., a subsidiary of the American Natural Gas Corp., has a party surveying right of way from San Angelo to the Big Lake Field, Reagan County, for a 12-inch gas line for the Oklahoma Natural Gas Corp. from the Big Lake Field to the Pecos Valley Power & Light Co.'s plant at Rio Pecos, to which place an 8-inch gas line will be constructed. Actual construction of the line is to commence February 1.

The Natural Gas Engineering Corp. has laid many miles of gas lines for the Southern Natural Gas Corp. in Alabama and Mississippi some months ago.

This new line from San Angelo and Rio Pecos to the Big Lake Field will take about three months to lay, and is to transport sweet gas produced from the eight deep producing wells in the field to these two points, and intermediate towns which will be tied in to the main line by gathering lines. Between San Angelo and Big Lake Field are the towns of Sherwood, Mertzon, Barnhart and Big Lake that will probably contract for gas from the line, and between the field and Rio Pecos are the towns of Rankin and McCamey that will probably be served by the 8-inch line.

The eight deep producers now produce around 180,000,000 feet of gas per day, or are capable of producing that amount, consequently they, and other deep producers now being drilled, and others which will be drilled later, offer a supply for these various points where the gas will be used for domestic and commercial purposes.

LOUISIANA MAY CHANGE GAS LINE ASSESSMENT

SHREVEPORT, La., Jan. 24.—A change in the method, or basis, of assessing oil and gas pipe lines in Louisiana will be recommended to the State Tax Commission as a result of a conference of pipe line representatives and the assessors of the several parishes of the State wherein pipe lines are located. The change is from a cost less depreciation basis to an ad valorem of so much per mile. John W. A. Jeter, Caddo Parish assessor, is authority for the statement that "the present system, inaugurated several years ago, which assesses pipe lines on a basis of cost less 6½ per cent per annum for depreciation, means that eventually pipe line assessments will become negligible and in the end disappear entirely. In other words, that while pipe lines will still exist, in fact they will disappear from the tax rolls. To avoid this and preserve the properties as a subject of taxation it is recommended that pipe lines be assessed at so much per mile, graduated according to diameter of the pipe.

OKLAHOMA NATURAL HEARING

The Oklahoma Natural Gas Corp. has obtained from the State Corporation Commission a continuance of the hearing for four weeks for the purpose of obtaining evidence to counteract the arguments on which the gas users hope to obtain a reduction of rates. Paul A. Walker, chairman of the Corporation Commission, granted the continuance on application of T. J. Underwood, attorney for the gas company.

Present rates were challenged in the hearing as being inequitable in view of present field prices for gas, modern methods of transporting the fuel and the reduced cost of distribution.

INDUSTRIAL GAS USE REFLECTS CONDITIONS

Revenues of manufactured and natural gas utilities aggregated $51,533,656 in November, a decline of 3.4 per cent from the same month of the preceding year, according to reports to the statistical department of the American Gas Association from companies representing nearly 90 per cent of the utility distribution of manufactured and natural gas.

The manufactured gas companies reported revenues of $31,554,091, a drop of 1 per cent, while revenues of the natural gas concerns totaled $19,979,565, or approximately 7 per cent less.

Sales of manufactured gas reported totaled 29,585,612,000 feet, a decline of 1.7 per cent, while natural gas sales were 41,662,311,000 feet, a drop of nearly 11 per cent. The more marked curtailment in natural gas sales was the result of the relatively larger proportion of industrial business handled by these companies, as natural gas sales for industrial purposes declined from 17,149,954,000 feet to 13,-308,392,000 feet in November, 1930, a drop of more than 22 per cent.

This same tendency toward sharp curtailment of industrial sales was also manifest, although to somewhat less extent, in territories served with manufactured gas. In the East North Central states, comprising Illinois, Indiana, Michigan, Ohio and Wisconsin, manufactured gas sales for industrial purposes declined by nearly 16 per cent, the loss being most pronounced in such states as Indiana and Wisconsin, which showed a drop of some 20 per cent in this class of business. In New England the decline in industrial sales was much less severe, and two states, Massachusetts and Connecticut, registered slight increases in gas sold for industrial purposes.

OKLAHOMA UTILITIES CONVENTION IN MARCH

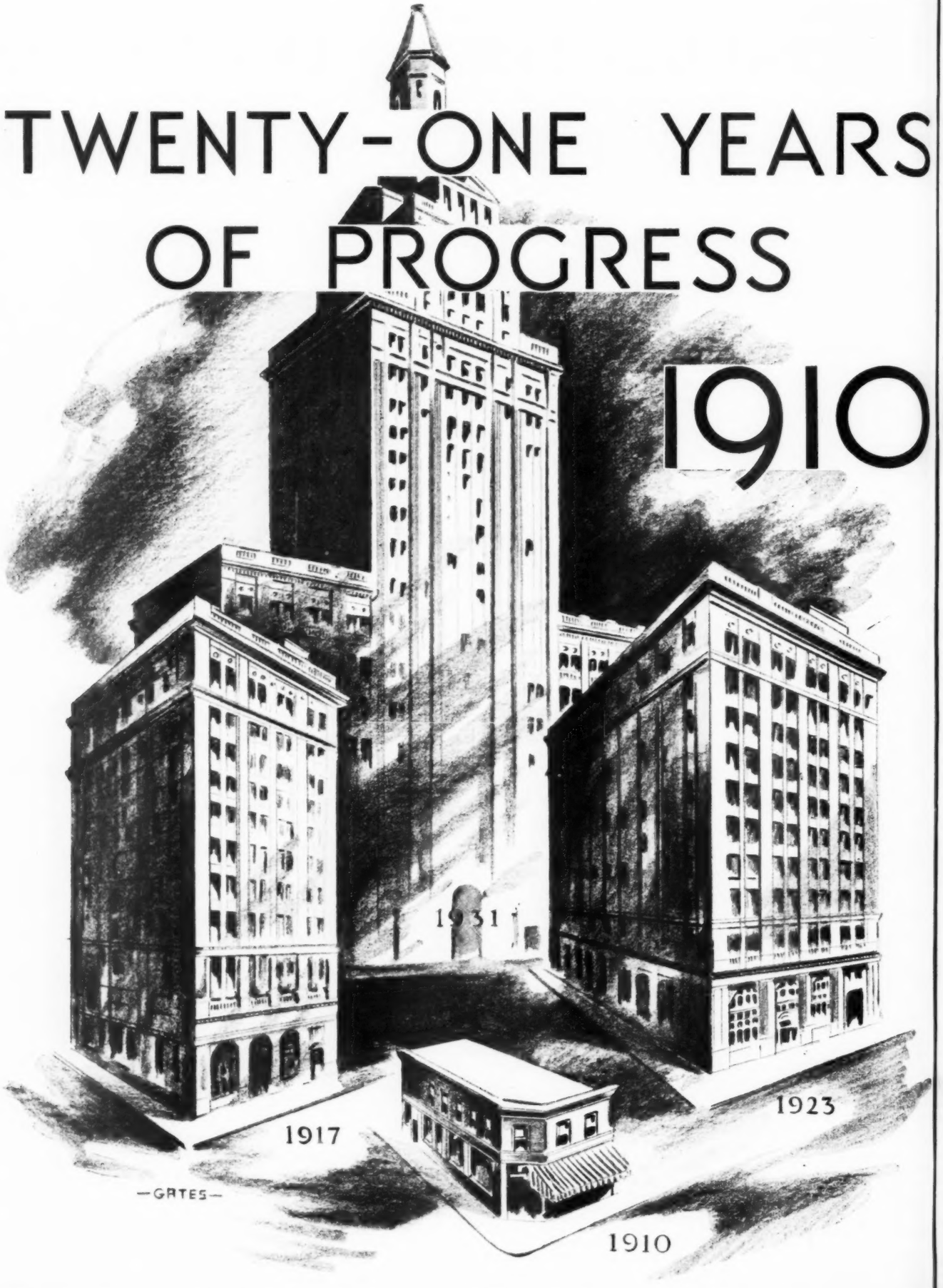
The annual banquet will be eliminated from the program of the convention of the Oklahoma Utilities Association to be held in March at the Huckins Hotel in Oklahoma City, according to E. F. McKay, manager. The convention committee of the association at a recent meeting decided to eliminate the usual social and entertainment features and to hold a two days' convention instead of three days as in former years. "With a general business session on the morning of the first day only, division meetings of the association will be especially emphasized during the two days," said Mr. McKay, "in an effort to bring out practical and helpful ideas and to assist companies in improving their operating methods and service to the public."

D. S. McMANUS MANAGER UNITED DISTRIBUTION

HOUSTON, Tex., Jan. 26.—D. S. McManus, for the past six years connected with the Gulf States Utilities Co. and the Louisiana Electric Co. at Lake Charles, La., has been appointed division manager of the southwest Louisiana division of the United Gas Distribution Co. a member of the United Gas System.

The division of which Mr. McManus will have charge has recently been formed, including more than 40 towns and cities in southwestern Louisiana which will be served by a new gas line system now under construction by the United Pipe Line Corp. The trunk line of the system extends from Kirbyville, east Texas, to Franklin, St. Mary Parish, Louisiana, a distance of 158 miles. This line also will feed six main lateral lines.

TWENTY-ONE YEARS OF PROGRESS



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General Superintendent of Production, Deep Rock Oil Corporation

OF AMERICA

Important Oil Lines Laid in 1930

Pipe Lines From Mid-Continent Fields to Eastern Refineries and Gulf Coast Terminals Featured Construction Work

The year 1930 did not pass without the construction of important crude oil pipe lines. The tremendous gas pipe line program of the year somewhat overshadowed the crude oil pipe line work in interest, but when it is recalled that two big trunk lines were laid from the Mid-Continent fields to refineries in the East and notable fields like Van, Texas, and Hobbs, New Mexico, were given a pipe line outlet to the Gulf Coast and to the Mississippi River by connections with trunk lines laid in former years it will be seen that last year was an important one in oil pipe line construction.

Ajax's Big Line

The Ajax Pipe Line Co. completed its twin 10-inch pipe line from the Glenn Pool, and few miles south of Tulsa, Okla., to Wood River, Ill., a distance of approximately 400 miles, where it makes connection with the Illinois Pipe Line Co. The line was completed in December finishing one of the major pipe line programs of the year. The line when in full capacity can handle 65,000 bbls. of oil a day. When this was written the line was handling around 12,000 bbls. of oil a day which was to be gradually increased when requirements demanded.

The line is owned by Standard Oil Co. (New Jersey), Standard Oil Co. of Ohio, and the Pure Oil Co. It was constructed to transport crude oil from the Mid-Continent area to the refineries of the Standard companies at Parkersburg, W. Va.; Toledo and Cleveland, Ohio, and Latonia, Ky., and Imperial Oil, Ltd., Canada, also to the Pure Oil Co.'s refineries at Newark, Ohio; Toledo, Ohio; and Charleston, W. Va. The Pure Oil Co. is the largest operator in the Van Zandt area, in Texas, from which the Humble Pipe Line Co. built a pipe line to East Texas, where a connection was made with the Standard Pipe Line Co. running to the Baton Rouge refinery, of the Standard Oil Co. of Louisiana. Under the agreement, the Pure Oil Co. can trade Van Zandt County oil to the Standard for crude oil produced and purchased by Carter Oil Co., a subsidiary, of Standard Oil Co. (New Jersey), in Oklahoma, convenient to the new Ajax line.

From Oklahoma City

The Continental Oil Co. began the construction of an 8-inch pipe line in 1930, from its main trunk line system near Tonkawa, Okla., to the Oklahoma City Field. The line is approximately 80 miles in length and was built to give the company an outlet for its own crude oil in the Oklahoma City area. The line was expected to be ready by February 1. The actual construction work was started December 3. The new line will connect the company's leases in the Oklahoma City Field with the company's refinery at Ponca City, Okla. The capacity of the line will be 10,000 bbls. a day with only one pump station. It is believed the capacity can be increased with additional pump stations, if requirements demand.

The Champlin Refining Co. completed its extension of a 6 and 8-inch pipe line from the main line in Logan County to the Oklahoma City Field, in September. The entire pipe line system now runs from the company's refinery at Enid, Okla., to the Oklahoma City Field. From Logan County to the refinery the line is a 6-inch, and the balance is 6 and 8-inch. The company began running oil at the new line's capacity of 18,000 bbls. a day, when completed, with one pump station at the Oklahoma City end of the line. The extension line was approximately 65 miles in length. The company is expected to become a purchaser of crude oil in the Oklahoma City Field and it may increase the capacity of the line building additional pump stations.

The Union-Gulf Pipe Line Co.'s 900 miles of 10-inch line almost parallels the Ajax line as far as the Mississippi River. The line which was built in 1930, starts at the Glenn Pool, near Tulsa, Okla., and runs to a point near Lima, Ohio, with a branch starting from Dublin, Ind., east of Indianapolis, to Cincinnati, Ohio. The line was being tested at the close of the year and was expected to be in full operation the second or third week in the new year. The capacity of the line is estimated to be 35,000 bbls. a day. Through arrangements with the Buckeye Pipe Line Co. and the Southwest Pennsylvania Pipe Lines, the Union-Gulf pipe line was carried to completion only as far as Adgate Station on the Buckeye Pipe Line Co. near Lima, and a connection made with that company to handle the oil to the Gulf Refining Co.'s Toledo refinery and to a connection with the Southwest Pennsylvania pipe lines at the Ohio-Pennsylvania state line. From there the Southwest Pennsylvania pipe lines will deliver oil for the new Pittsburgh refinery over its own system, which with the addition of about 1½ miles of new 6-inch, extends to Neville Island, Ohio River, the site of the new refinery at this writing. Mid-Continent crude was in transit and had reached the Buckeye pipe line in Ohio and was in transit to the Pittsburgh plant. It was expected that the first delivery of crude for the Pittsburgh plant would be made shortly after January 15 and that the new refinery would go in to operation shortly after. It is said that the initial capacity of the new Gulf refinery at Pittsburgh will be about 7,000 bbls. a day.

Sinclair-Texas Pipe Line

The Sinclair-Texas Pipe Line Co. laid a 12-inch line from the Oklahoma City Field, in Oklahoma, to the Sinclair Refining Co.'s refinery at Coffeyville, in southeastern Kansas. The line was 155 miles in length and was completed in December. The first month's runs averaged around 7,500 bbls. a day which were believed to be the requirements of the plant.

The Prairie Pipe Line Co. looped its 8-inch line from the pump station near Cushing to the Oklahoma City Field. The same company completed an extension from the Voshell Pool in McPherson County, Kansas, to the Schurr-Raymond Pool in Rice County, a distance of about 40 miles.

Derby Oil Co. laid a 4-inch line from the Voshell Pool in McPherson County, Kansas, to a loading rack at Burton in Harvey County, in the same State.

East Central Texas Outlets

The Pure-Van Pipe Line Co., formed by the Pure Oil Co. to build a 211-mile line from the Van Pool, Van Zandt County, completed this line and started running oil to Smiths Bluff on the Gulf Coast in July, 1930, running approximately 30,000 bbls. per day through this line during the remainder of the year. Three pumping stations were constructed for present use, and three auxiliary stations will be completed as needed.

This was the first trunk line to be constructed to the pool, although the company had previously constructed 19 miles of 10-inch line to a loading rack at Chandler where oil was first loaded out to Smiths Bluff in tank cars. The trunk line connected on the southern terminus of this short line at Chandler, making a total of 211 miles to the coast. The company also built a gathering system in the field, and took oil from all the wells in the Van Joint Account, and also in the Carroll district which makes up the area outside of the Pure Oil Co.'s unitized block.

The Humble Oil & Refining Co. completed the second 10-inch line into the Van Pool, and commenced running oil through it, December, 1930. This line terminates at Morgan Station south of Shreveport in Louisiana and the Standard Pipe Line Co.'s trunk line picks up the oil and transports it to the Baton Rouge refinery which is owned by the Standard Oil Co. of New Jersey. This new line out of the Van Pool is carrying 10,000 bbls. per day to Louisiana, but may soon be connected to the new producing area in north Rusk County, discovered on December 28 by Ed W. Bateman, whose properties have been purchased by the Humble Oil & Refining Co. for a reported sum of $1,600,000 in cash and $500,000 in oil. Humble is sure to run a line down from the aforementioned 10-inch, and take oil from this new area. It may also extend this gathering line 10 miles farther south into the Joiner Pool which was opened in October, 1930, and take oil from that area also.

Two 3-mile 4-inch lines have been laid out of the Joiner Pool in Rusk County to loading racks on the branch line of the I.&G.N. Railway to the north of the pool, one of the lines constructed by a new company named the Inland Waterways Pipe Line Co., and the second line by the Panola Pipe Line Co. which was organized by H. L. Hunt of Shreveport. One more line, a 6-inch, is now being constructed into the pool by the Rusk County Pipe Line Co., a company formed by Frank Foster, Charles Kolk and F. W. Borford, and still another 4-inch line is reported to start construction soon. This line will also be a short line to a loading rack on the railroad from which point the oil will be shipped out by tank car.

Some other pipe line or purchasing company may build a line into the Rusk County pools due to the fact that this oil is sweet and high gravity and is not far distant from Arkansas and Louisiana refineries which are in need of oil.

Lines in Project

The Arkansas Fuel Oil Co. which owns 3,500 acres of land around the latest interesting test in Gregg County, a test, on the Lathrop farm, which cored 4 feet of saturated sand, may enter the Gregg County area with a line if the test proves a discovery well opening a new producing area in this county, for this company is a subsidiary of the Cities Service Co. which owns other subsidiary companies in Arkansas and Louisiana which have refineries in need of oil. Such a line is quite logical, and is expected to be constructed as soon as the well proves a producer, but as it is now shut down with casing cemented, and several days or weeks may elapse before it is drilled in, depending upon the owners, nothing can be told definitely about the test, and no line will be considered until the well is a proven producer.

As East Central Texas is the most active and interesting district in Texas at the present time, and will be for several months, with the possibilities of opening up other Woodbine sand pools the year of 1931 may see several major pipe line projects in the district to construct trunk lines to transport production from the various pools. As the pools are comparatively new, the last one having been discovered on December 28, 1930, companies have really not had time to consider just what they will do in regard to running lines to the district, and due to the present condition of the industry, companies will think twice before they make a major construction move.

Gulf Coastal Lines

The Gulf Pipe Line Co. laid a line from Darst Creek, in Southwest Texas, to Sour Lake approximately 200 miles long. From Crosby to Sour Lake, a distance of 45 miles, the line loops or parallels the company's present trunk system, the terminus of which is at Lucas, south of Spindletop. This line, just recently completed, has a present capacity around 15,000 bbls. daily.

Other pipe line building on the Gulf Coast had to do with providing outlets for Refugio and Pettus, Hankamer, Moss Bluff and Esperson and necessitated only comparatively short distances of pipe line laying. Out of Refugio, Gulf Coast Pipe Line Co. and Humble Pipe Line Co. laid new lines. The former was a 10-inch and an 8-inch loop to the company's 6-inch and 4-inch lines put in late in 1929. These lines extend from the field to deep water loading terminals at Harbor Island a distance of 32 miles. The original line only had a capacity of around 10,000 bbls. daily and when Refugio production rose rapidly to as high as 43,000 bbls. early in the year, a serious congestion followed. A new pipe line station was built at a point about midway on the line which increased the capacity to around 15,000 bbls. but it was not until the loop was completed that adequate pipe line capacity of around 50,000 bbls. daily was provided.

About the same time Humble Pipe Line Co. started construction of an 8-inch line from the field to Humble Oil & Refining Co.'s refinery and terminal at Ingleside, a distance of 28 miles. This was completed in April. Since, the company has extended the line northward to Pettus, laying 30 miles of 6-inch, and providing Pettus its first pipe line outlet.

Humble Pipe Line Co. also laid [illegible] miles of 4-inch pipe from the Humble Field to Baytown, the location of Humble Oil & Refining Co.'s refinery.

Humble Pipe Line Co. has just completed a 6-inch line from Barbers Hill to Moss Bluff, Liberty County, a new Coastal field. This line is 15 miles long and connects at Barbers Hill with the company's line to Goose Creek and Baytown. This provides the first pipe line outlet for Moss Bluff, in which there are four producing wells.

With the development of Gulf Production Co.'s new field at Hankamer, southern Liberty County, Gulf Pipe Line Co. laid an 8-inch line from there to Sour Lake, a distance of 22 miles, where it tied into the company's main system. The line has a capacity of 15,000 bbls. daily.

Sun Pipe Line Co. laid a small line from the new Esperson Field of western Liberty County, to a connection with its main line at North Dayton. This required only 5 miles of pipe but it furnished pipe line outlet for that field.

Gulf Coast Pipe Line Co built an 8-inch oil line from the Refugio Field south to Aransas Pass, paralleling the 6-inch line it already had in operation, a total distance of about 30 miles.

West Texas-New Mexico

West Texas saw considerable oil pipe line construction during the year of 1930, but most of them were comparatively short lines.

The Humble Pipe Line Co. laid an 8-inch line into the Hobbs Field from Winkler County. The Shell Pipe Line Co. also laid a short line from the Hobbs Field to a point on the Texas Pipe Line Co.'s line which runs from the Lynch area to Jal, thence on to Winkler County where the Texas Pipe Line Co. delivers oil from New Mexico for the Shell Petroleum Corp. The Atlantic Pipe Line Co. completed 78 miles of 8-inch from the Midland tank farm, in Texas to the Hobbs Field and started running oil through July 8.

The Penn Pool which has been the most active in West Texas during the year is now served by four short lines, all of which connect to other lines traversing the area. The first line built into the area was by the Gulf Pipe Line Co., connecting with its 10-inch main lines which run from Monahans to Midland, near the

Penn Pool. The Burford Oil Co., which has a line from the Hendricks Pool, Winkler County to Pecos City, serving its refinery at the latter place, also built a line into the Penn Pool from Winkler County. This line is a 4-inch carrier. The Humble Pipe Line Co. laid a short 6-inch line to connect with its Winkler-McCamey line to the south in Crane County. The Magnolia Pipe Line Co. built 10 miles of 6-inch line from the pool to connect with its 8-inch line which runs north of the pool from Winkler County to Midland and is carrying oil to Big Spring for the Cosden Oil Co.

A short 2-inch line was built out of the Tankersley Pool, Irion County, the forepart of the year, oil from this pool being loaded into tank cars from a loading rack near Mertzon, and shipped to the San Angelo Refining Co. at San Angelo, Tex.

C. R. Pope and associates laid a short 2-inch line from their No. 1 Swann prospect, 1½ miles northeast of the Noodle Creek Pool, Jones County, in November, connecting with the Phillips Petroleum Company's loading rack on the T. & P. Railroad at Trent. No contract has been made to take oil from the well, to date.

Dunnigan and others laid a short 2-inch line from their lease in Taylor County to a loading rack at Tye, on the Texas & Pacific Railroad, and are shipping oil by tank car to the Marathon Oil Co.'s refinery at Fort Worth.

Rumors of Long Line

One major line by the Illinois Pipe Line Co. from the Yates Field, Pecos County, to Glenn Pool, Oklahoma, has been rumored several times during the year, but nothing has yet been done in regard to making surveys, or purchasing right of way and, due to present conditions of the industry it is not believed that such a line will be laid for some months. The company has a looped 8-inch line out of the pool to a tank farm at Del Rio and a line from there to a station on the Humble Pipe Line Co.'s 10- and 12-inch line, south of San Antonio. Humble picks up the oil from the Illinois line at this place and transports it to Port Aransas for shipping or refining at that place.

North Louisiana-Arkansas

Oil pipe line construction in the North Louisiana-Arkansas division was limited to Standard Pipe Line Co.'s 4 miles of 8-inch from Holly Pool in De Soto Parish, Louisiana, to connect with the Oklahoma-Baton Rouge trunk; 18 miles of 6-inch from Zwolle to Oxford Station, Louisiana, on the same line and 4 miles of 6-inch from Urbana Pool in Union County, Arkansas, to the Kenova-Mississippi River 10-inch line. Mount Vernon Oil & Gas Co. built 3 miles of 3-inch to handle its Barepta production to loading rack on the L. & A. Railroad in Webster Parish.

California Pipe Line Work

Pipe line construction work was a negligible factor in California during 1930 as the failure of prospectors to open up new fields eliminated the necessity of laying new lines. The Mountain View Field, located in the Weed Patch area of Kern County, was the only new field discovered in California during 1930 but, due to curtailment work, no commercial production was developed and consequently no pipe line was necessary. It is quite possible, however, that the Shell may lay a short lateral out of this field some time within the next few months as two new wells are scheduled for early completion. The Shell does not have a pipe line system in the San Joaquin basin south of Coalinga in Fresno County, and for this reason will probably only lay a short line from this field to a trunk line of one of the other major companies. Eventually the Shell will extend its pipe line facilities south of Coalinga, but right now it is cheaper to pay some other company to transport its oil as it does not have sufficient production to justify the operation of an independent line. The route to be followed by the Shell will probably be via Lost Hills, Belridge, Midway-Sunset and Fruitvale when it extends its pipe line southward from Coalinga to Mountain View. A lateral would provide an outlet for production and purchases in the Mount Poso and Round Mountain Fields. The Union and Associated laid about the only oil lines of any consequence during 1930 and both of these installations were of a minor nature as far as importance and amount of pipe is concerned. The Union's pipe line construction work consisted of laying a 6-inch line from the Playa Del Rey Field to Manchester Avenue in Los Angeles, about 5 miles away, where it was connected up with existing facilities. Construction work of the Associated consisted of augmenting its pipe line facilities in the Ventura Avenue Field. This company was granted a 50-year franchise for a combination 8-inch and 10-inch line by the Ventura City Council late in 1930. Construction work has just about been completed on the 8-inch line, which extends from the Ventura Avenue Field to tidewater where it is connected up with a 10-inch submarine pipe line. The submerged line extends out beyond the tide line for a distance of 2,700 feet and, like other similar installations, has 150 feet of flexible rubber hose at the sea end which, when not in use, is allowed to rest on the floor of the ocean. This gives the Associated two pipe lines from the Ventura Avenue Field to tidewater and two submarine loading lines, enabling two tankers to load simultaneously.

Work in Contemplation

The coming year, 1931, will probably see considerably more pipe line construction work undertaken as tentative plans have already been completed for one new oil line and a gas transmission line, both of which will be of major importance as far as California construction work is concerned. It has not been necessary to lay any major trunk lines in California for several years due to the proximity of producing fields to the areas of highest consumption. General Petroleum Corp., a subsidiary of Standard Oil Co. of New York, acquired 586 acres between Morro Bay and Cayucos in San Luis Obispo County, during October, 1930, as a preliminary move toward construction work on a new pipe line which will extend from Kettleman Hills to tidewater. No date has been set for the starting of construction as this will depend to a large extent upon the outcome of unit development in the north dome at Kettleman Hills. Pending the construction of this new installation, the General Petroleum will continue to use its present line which extends from Kettleman Hills to Lost Hills, where it in turn is connected up with the company's main trunk which extends southward to Los Angeles, a distance of approximately 140 miles. The General Petroleum has extensive holdings in the Kettleman Hills Field and will consequently need a new line as soon as development work is permitted, as present facilities are inadequate and unsuitable for the transportation of this high gravity crude. The Union and Standard are already operating pipe lines over the route to be followed by the General Petroleum. The Shell Oil Co. may also lay a new pipe line over to the coast from Kettleman Hills, although nothing definite has been decided up to the present time. The Getty Oil Co., which has some potentially productive acreage at Kettleman Hills, has intimated that it may also lay a pipe line along this same route at some future date, but this work will probably be delayed until a more propitious time.

A Big Project

The Southern Fuel Co. will lay the largest and longest pipe line in California during 1931 as far as is known at the present time. The natural gas transmission line to be laid by this company will extend from Kettleman Hills to Los Angeles, a distance of about 175 miles, and cost in the neighborhood of $7,000,000. It will be 26 inches in diameter and actual construction is scheduled to get under way about April 1. The construction of this new line has been under consideration for more than a year as the enormous potential production of natural gas at Kettleman Hills is sufficient guarantee that there will be enough gas to last for a number of years to come. The amount of natural gas available for commercial consumption has been declining in Southern California for some time due to curtailment work and a natural decline in flush fields. This new line will have a normal capacity of 130,000,000 feet per day, equal to about 30 per cent of the total amount now handled in the Los Angeles metropolitan area. It is interesting to note in this connection that natural gas from Kettleman Hills is utilized by 1,270,000 persons in 161 cities and communities in 26 counties of the State of California. Approximately $25,000,000 has already been expended in the laying of gas transmission lines and auxiliary equipment within the past three years in order to place Kettleman Hills gas in the San Francisco Bay region and in the Los Angeles metropolitan area. The Southern Fuel Co. is a corporation owned jointly by the Southern California Gas Co. and the Southern California Edison Co. A. M. MacBeth, president of the Southern California Gas Co., is president and general manager of the Southern Fuel Co. and F. B. Lewis, vice president and general manager of the Edison Co., is vice president and assistant general manager.

In Rocky Mountain States

The construction of pipe lines for the transportation of crude oil in the Rocky Mountain area during 1930 was limited to a few projects, the most important of which was the serving of the Hobbs Pool in Lea County, New Mexico, mentioned elsewhere in this account.

The only other pipe line construction in New Mexico was a 6-mile line from the Getty wells in the Twin Mounds or Getty Pool in Eddy County to the State Oil & Refining Co.'s plant at Dayton. This formerly was known as the Sullivan Refineries, Inc., but was acquired by Stephen Lanning and associates, of Inglewood, Calif., who reconditioned it and put it into operation during the year.

Prospects in Colorado

There was no oil pipe line construction in Colorado or Utah during the year, but it is probable that one or more projects will be undertaken in 1931, their construction depending upon the development in eastern Colorado following the discovery of oil on the Greasewood structure in Weld County. The Continental Oil Co. has applied to the Public Utilities Commission for a permit to build a line from the discovery through Brighton to its new refinery just north of Denver. This line to be approximately 75 miles long. The Platte Valley Petroleum Co., which brought in the discovery well, also has an application pending for a permit to build a 10-mile line from the well to a railroad connection at Orchard.

In Wyoming, the Midwest Refining Co. built a short connection from the discovery well on the Midway Dome in Natrona County to one of its lines from Salt Creek to the refineries at Casper. The Illinois Pipe Line Co. built a 4-mile extension of its system serving the Osage Field in Weston County, in the northeastern part of the State to take care of increased production in what is known as the Jones Pool. In this connection a small pumping station was installed and 1¾ miles of 3-inch line was laid to a junction point on the old Osage-Clay Spur 3-inch line. The Producers & Refiners Corp. replaced its 54-mile line from Little Lost Soldier in Sweetwater County to Parco with an 8-inch line to take care of increased production.

Oil Lines in Montana

In January, 1930, the Illinois Pipe Line Co. laid a 4- and 6-inch pipe line from the Border Field to Sweetgrass, Mont., a distance of about 11 miles. Another line was laid on the Canadian side of the boundary so the Border Field is now being served with two pipe lines.

In November, the Illinois Pipe Line Co. completed a 6-inch pipe line from the Dry Creek Field in Carbon County, southern Montana, to Bridger, a distance of about 9 miles, to carry the oil from the Dry Creek Field to the loading rack on the Burlington Railroad at Bridger.

The Heinrich interests of Minneapolis, who are negotiating for the purchase of the Soap Creek Field in Big Horn County, propose to lay an oil line from that field to Billings. The line is to be 55 miles long and is to cost $350,000.

Michigan Pipe Lines

Michigan's longest crude oil pipe line was laid by the Pure Oil Pipe Line Co. in 1930. The new line is 40 miles long and connects the Pure Oil tank farm in the Mount Pleasant Field with the company's new Great Lakes terminal storage tank farm and loading dock at Bay City, on Saginaw Bay, Lake Huron.

One other comparatively large pipe line gathering system also was laid during the year by the Simrall Pipe Line Corp., of Cincinnati, Ohio, and later sold to the Northland Oil Co. to run crude to the Roosevelt Refining Co.'s new refinery erected at Mount Pleasant early in the year.

Three smaller lines, two in the Leaton Pool and one at Muskegon, complete the new oil line program of the year.

The Pure Oil Pipe Line Co. completed its 6-inch line to Bay City at a cost of about $500,000 early in August. The line connects a storage tank farm of eight 55,000-bbl. tanks in Section 17, Greendale Township, Midland County, in the proved Mount Pleasant Field with a similar battery of eight 55,000-bbl. tanks at the Bay City dock.

A slip 900 feet long, 165 feet wide and from 16 to 18 feet deep was dredged in the Saginaw River to provide an approach for the 17,000-bbl. tankers to be used to transport crude oil by boat to Great Lakes refineries.

First shipments of crude from the new dock went to the Imperial Refining Co.'s plant at Sarnia, Ont. Operations were suspended for the winter months early in December, however.

Later operations to be resumed in the spring will result in regular boat shipments of crude from Bay City to the new $5,000,000 plant of the Hickok Oil Co. now being erected on the Maumee River at Toledo, Ohio. The first unit of this plant will have a capacity of 6,000 bbls. of crude oil daily.

In the meantime oil is being run into storage at the two tank farms on a proration schedule adopted by the Pure Oil Pipe Line Co. on September 4 and depending upon the storage capacity.

Doubling of the storage capacity at Bay City to sixteen 55,000-bbl. tanks also has been considered by the company.

The Simrall Pipe Line Corp.'s line is the 16-mile line of 4-, 3- and 2-inch pipe laid to leases in the Chippewa Township, Isabella County, area of the Mount Pleasant Field. This line cost about $75,000 and is being used to run oil to the plant of the Roosevelt Oil Co., formerly the Michigan Central Refining Co. plant, at Muskegon.

The Old Dutch Construction Co. and the Wellman Oil Co., of Muskegon and Grand Rapids, respectively, laid smaller and shorter lines of several miles each in the Leaton Pool during the year. Each have been running several hundred barrels of oil daily from this pool.

The Old Dutch oil has been shipped by rail to the independent plant of the Old Dutch Refining Co. at Muskegon and the Wellman oil has been shipped to other independent refiners near Michigan in exchange for refined petroleum products.

A third short line of about 3 miles of 2-inch pipe was laid in December in the Muskegon Field by the Naph-Sol Refining Co., a new concern formed to take over, enlarge and operate the former 500-bbl. plant erected 18 months before by the Muskegon Refiners, Inc., but never operated.

The former Northland Oil Co. pipe line and a short line laid by the United Petroleum Corp. in the Muskegon Field were abandoned and taken up during the year.

In the Eastern Field

In the Eastern Field during 1930 pipe line development interest was not centered so greatly in the amount of construction as in the purposes for which the lines were to be used. Gasoline lines and natural gas lines replaced oil lines in the East to a great extent during the year.

In the Bradford-Allegany Fields during 1930 considerable new pipe line was laid, the construction being of a dual nature, to provide water to the pressure wells and to provide new oil lines to new storage tanks and to refining centers. Considerable work of this nature was done by the National Transit Co. and the Bradford Transit Co., with both companies enlarging their lines, pumping and storage facilities.

Vast Mileage of Gas Lines in 1930

Cities From Florida to Minnesota Will Be Supplied With Gas From Mid-Continent Fields Through Lines of Great Size

Never in the history of the natural gas industry was there more important gas line construction than that begun in 1930 and which will be in full operation this year. In years gone by it was considered a great achievement to have piped natural gas from West Virginia fields to "far off" Cleveland, Ohio. Soon Pensacolans in Florida will be burning natural gas produced in Louisiana; Chicagoans and denizens of the Twin Cities in Minnesota and Indianapolis, Ind., will be turning on gas produced in the remote Texas Panhandle. Gigantic projects were put in motion last year that were undreamed of a few years ago.

The discovery of gigantic gas fields in the Texas Panhandle, western Kansas, North Louisiana, Southwest Texas, California, Oklahoma and parts of the Rocky Mountain States in recent years has advanced the natural gas industry to a place it has never before held, which is all the more remarkable when it is remembered that the industry was on a slow decline when the first of these discoveries was made. Now the supply of natural gas is incalculable and is believed to be adequate for many years. Even eastern counties in New York and Pennsylvania are coming to the front as natural gas producers with a market right at their door supplied by a pipe line that extends to the Hudson River opposite the city of New York.

Big Lines From Panhandle

The Missouri Valley Pipe Line Co. has been busy throughout the year constructing a 24-inch gas line from the Panhandle district of Texas to Chicago and to Indianapolis, Ind.

The Missouri-Kansas Pipe Line Co. formed the Texas Interstate Pipe Line Co. to operate the line, and produce gas properties of the company in the Panhandle district where it purchased several thousand acres for gas development. Three compressor stations are being constructed on the line: one at Liberal, Kans.; one at Louisburg, Kans., and one will be constructed east of the Mississippi River.

The Continental Construction Co. is laying another long gas line out of the Panhandle district of Texas to Chicago, Ill. This is a 20-inch line in which the Cities Service Company, the Insull interests, the Standard Oil Co. (New Jersey), Skelly Oil Co., Phillips Petroleum Co., Producers & Refiners Corp., The Texas Company and the Columbian Carbon Co. are interested. Construction of the line is under the direction of Henry L. Doherty & Co.

The Lone Star Gas Corp. and associates are constructing a 24-inch gas line out of the Panhandle district to Nebraska and Des Moines, Iowa, and will soon complete all stations, and work on the line. The main compressor station is located at Clifton, Kans. The North American Light & Power Co. and United Light & Power Co. are associated in building this line with the Lone Star Gas Corp. The Missouri Valley Gas Co. is the name of the operating company for the line.

These three major pipe line projects are the largest in the United States, and will serve hundreds of towns in Nebraska, Illinois, Missouri, Kansas, Minnesota, Indiana and Kentucky, in addition to large cities.

The Oklahoma Natural Gas Corp. has contracted with the Continental Oil Co. and Big Lake Oil Co. for a big supply of sweet gas from those companies' deep wells in the Big Lake Field, Reagan County, and is to commence construction on a 12-inch gas line from San Angelo to the pool by February 1, 1931, and an 8-inch line from the pool to Rio Pecos, west of the town of McCamey. Lateral lines will be constructed to towns along the line and to towns a short distance off of the line, to serve those places with gas from this field.

Natural gas transportation and distribution systems in South Texas underwent further substantial expansion during the past year. Construction programs completed or started in 1930 involve an expenditure of better than $25,000,000, including looping of old lines, building of entire systems or extensions, and the addition of a number of new compressor stations.

The latest gas line project is that of the United Pipe Line Corp. now under construction across southern Louisiana, which will provide natural gas for a territory never before served by this fuel, except for a few local systems. The main line will extend from a tie-in near Kirbyville, East Texas, easterly across Southern Louisiana to Franklin, St. Mary Parish, a distance of 158 miles. This trunk line will be a combination 14-inch, 12-inch, 10-inch, 8-inch and 6-inch line, and, according to franchises already granted, 10 important towns will be served directly from it. In addition six main lateral lines will branch off this trunk which will require the laying of an additional 225½ miles of pipe ranging from 8-inch down to 2-inch. In all, more than 40 towns have granted franchises for natural gas distribution to be served by this project.

At Kirbyville, Texas, this line ties in with the 16-inch trunk line from northeast Texas to Port Arthur, formerly owned by the Magnolia Gas Co., but which was sold to the United Gas Companies early the past year. The new system is expected to be in operation by March, forming an important unit in the gigantic network which has been built up by these interests.

An important gas system just completed by the United Pipe Line Corp. is that which pipes gas from the Boggy Creek Field of Anderson and Cherokee Counties southward across East Central Texas as far as Huntsville in Walker County. The main line, 100 miles long, is 6-inch pipe, but off from this are numerous short and small branches to serve various towns and industries through that territory. This is a separate system in itself as at present it has no tie-in with any other unit of the United Gas Co. Virtually all other units, which spread over Texas and Louisiana and as far as St. Louis, Mo., and Atlanta, Ga., are connected at some point.

United Pipe Line Corp. also has just completed another new project in Southwest Texas which will pipe natural gas from Buda, 15 miles south of Austin, where the line ties in with the company's Southwest Texas-San Antonio and Austin trunk, to Halletsville, extending 110 miles through Travis, Bastrop, Lee, Fayette and Lavaca Counties. This is a combination 12¾-inch, 10¾-inch, 8-inch, 6-inch, 4-inch and 2-inch line.

The major looping project of that company was on its Refugio-Houston trunk system where 139 miles of 16-inch pipe was laid, increasing the capacity at Houston to 100,000,000 feet daily. This loop was laid in two sections, the first from Refugio to Edna and the second from Ganado to Pierce Junction (Houston gates).

On the San Antonio and Austin line of this company 15 miles of 16-inch loop was laid from Converse (12 miles northeast of San Antonio), to New Braunfels, and 15 miles of 12-inch from New Braunfels to San Marcus.

This company also laid 40 miles of 18- and 16-inch line from Refugio, through Pettus, to Kenedy. At Refugio, this line ties in with the company's trunk to Houston, and at Kenedy it ties in with the San Antonio and Austin line. Thus, this line links two of the company's major units.

Three major compressor stations were built by the United Pipe Line Co., including a 4,000-horsepower plant at Sterlington on its line across Northern Louisiana; a 3,000-horsepower plant at Goodrich on its Waskom-Houston and Port Arthur line, and a 1,500-horsepower plant at Bruni on the Southwest Texas system.

The Houston Pipe Line Co., which also has a trunk line system extending from Southwest Texas fields to Houston, made no major additions during the year. However, several smaller extensions were made, including a 25½-mile and 12-inch auxiliary line from Refugio to Fannin, Goliad County; 16 miles of 4-inch line from Midfield, south through Blessing, to Palacious to supply gas to those towns, and 13 miles of 12¾-inch line from Boling to Long Point. The latter is an extension of a 12¾-inch line laid during 1929 to Boling from a point near Wharton on the company's main line to Houston. It was put in to supply fuel to the Texas Gulf Sulphur Co. operations there and was extended to Long Point when the sulphur company built a plant at that place. The line eventually may be extended a distance of around 20 miles to a connection with the company's loop line from Freeport to Houston.

A smaller line laid by the Houston Pipe Line Co. was that from the Freeport-Houston line to Danbury, where the company supplied gas as fuel to the Shell Petroleum Corp. in its drilling operations.

Gas From Western Kansas

The Missouri Valley Gas Co. (Lone Star Gas Co.), was completing its 24-inch gas line from the Texas Panhandle to Council Bluffs, Iowa, via Ness City, Kans., and Lincoln, Neb. The line passes through the Hugoton gas field in southwestern Kansas, where it will secure part of its gas supply.

Argus Production Co. in February completed 85 miles of lateral 8-inch pipe lines from the Hugoton gas field to 15 communities in the southwestern part of Kansas.

Cities Service Co. completed several projects during the year. In February 50 miles of 20-inch pipe was laid from a point 15 miles south of Perry, in Oklahoma, to the Oklahoma City Field. The same company completed 116 miles of 8-inch gas pipe line from Lyons, Kans., to Superior, Neb., and added to its lateral lines a 20-inch line from Dilworth, Okla., to a point south of Wichita.

Oklahoma Natural Gas Corp. constructed a 16-inch gas line from the Quinton Field to the southeastern part of Oklahoma. The company also completed a 16-inch gas line from the Quinton gas field to Muskogee, Bald Hill, Okmulgee County, and Tulsa, Okla.

Southwestern Natural Gas Co. laid 112 miles of 16-inch gas main from the Quinton gas field to Muskogee, Sapulpa and Tulsa.

Oklahoma Central Utilities Co. completed a 6-inch line from gas wells near Blocker, Okla., to Hartshorne and Haileyville, Okla.

Public Service Corp. of Nebraska was constructing a 16-inch gas line from the Hugoton gas field in southwestern Kansas to western Nebraska and Wyoming.

City of Colorado Springs, Colo., plans to construct in 1931, 200 miles of 10-inch gas main from the Hugoton gas field to Colorado Springs.

A. J. Hardendorf, of Lamar, Colo., completed 91 miles of 8- and 6-inch gas line from the Hugoton gas field to several communities in southeastern Colorado.

Bourbon Pipe Line Co. laid 43 miles of 8-inch gas main from Mapleton, Kans., to Butler, Mo.

Quinton Natural Gas Co. completed a 4-inch gas line from the Quinton gas field to Warner.

Aside from routine construction involved in maintenance of existing systems there was little natural gas pipe line activity in the Louisiana-Arkansas territory in 1930, the most noteworthy developments having been the transfer of several lines to new owners by purchase and through mergers. Chief among these was the purchase by United Gas System, or United Pipe Line Co., the System's transporting subsidiary, of the 22-inch line built two years ago from Lake to the Monroe and Richland Fields by Magnolia Pipe Line Co., and the purchase by the United from the Southern Natural Gas Corp. of the 470-mile line through southern Mississippi and Alabama to Pensacola, Fla. By merger the United System also acquired lines in Monroe, Bossier and other gas producing areas of North Louisiana, these being the gathering systems and trunk lines of Excelsior Pipe Line Co. in Monroe; Louisiana Gas Co., and Palmer Corp. in Bossier and Webster Parishes into Shreveport, and tapping lines of other transporters to whom United Gas System's producing companies sell gas. Details of the transfer of the Magnolia and Southern Natural Gas Co. branch to the United were not revealed.

New construction in North Louisiana was limited to short stretches of small lines. Louisiana Gas & Fuel Co. (United), built 14 miles of 10-inch line from the new wildcat gas area in northwestern Caddo to its gasoline station in the Pine Island district and 10 miles of the same diameter from the Sugar Creek gas district to connect with the 22-inch line from Monroe to Latex. It also built between 30 and 50 miles of 4-inch line, taking gas from the four or five wells forming the East and West Carroll Parish Field, to Lake Providence and smaller communities close by. Arkansas Natural gas Corp. engaged in no new construction except that required to take gas from the Mississippi Valley Fuel Corp. line from Monroe to St. Louis to adjacent communities in eastern Arkansas, several of which were added to the list of those supplied through Southern Cities Distributing Co., the marketing agency. In addition to the two short lines mentioned, Louisiana Gas & Fuel Corp. added four 1,000-horsepower Cooper-Bessemer units to the Sterlington compressor station on the Monroe-Latex line. Sabine Gas Co., which was already serving many with gas through a 20-mile 4-inch line from Pleasant Hill, built a short line to supply Zwolle.

Into the Old South

In Mississippi, Alabama and Georgia it was a different story, Southern Natural Gas Corp. having been quite active in extending its lines to additional towns in those States. These extensions involved construction of approximately 500 miles of line at an expenditure in excess of $15,000,000. One of these, the line to Pensacola referred to, leaves the Monroe-Atlanta main line at Yazoo City, Miss., crossing the State in a southeasterly direction to Mobile, tapping the Jackson, Miss., gas field en route, with laterals built or to be built to Laurel, Gulfport, Biloxi, Pacagoula and practically every other community of importance on or near the route. Another extension is from Tuscaloosa, Ala., to Montgomery and Salem, via Columbus, Ga., 105 miles, with laterals to Tuskegee, Auburn and Opelika. Near Atlanta another branch leaves the main line and supplies Macon, Ga., and from it laterals reach Thomaston, Milledgeville, etc. This branch involves approximately 185 miles of line. Additional compressor capacity to take care of these

and later extensions is provided by a new plant of five 1,250-horsepower units at Pickens, Miss., an additional unit of the same size at the Reform, Ala., station and a third station of two 1,000-horsepower units at D'Armandville, Ala.

Memphis Natural Gas Corp., built 50 miles of 10-inch from the Monroe-Memphis main line to serve Leland, Indianola, Morehead, Ittabena, and Greenwood, Miss., and another of the same size and length serving Winona, Carrollton, Grenada and Charleston, Miss. Peoples Light & Power Co. built 32 miles of 10-inch line from the Amory Field in Monroe County, Mississippi, to serve Tupelo, and 14 miles of 10-inch to Aberdeen, the two also serving a number of smaller towns along the route. In addition to this trunk line construction there has been a great deal of distributing system construction as more and more towns are added to the list of those served by the Memphis Natural Gas Corp., Southern Natural Gas Corp. and United Gas System either directly through their respective marketing agencies or as wholesalers to other local distributors.

Aside from rumors, little new construction except laterals to reach more towns in Mississippi, Georgia, Alabama and Florida, is in sight. It is possible that Arkansas-Louisiana Pipe Line Co. may build a line into the Jackson Field and there have been rumors that the Missouri-Kansas Pipe Line Co. is contemplating building into the same field. Missouri-Kansas Pipe Line has brought the entire output of the Pearl River Oil & Gas Co. in Jackson amounting to approximately 165,000,000 feet daily open flow from four wells, and also is reported actively buying proven, semiproven and wildcat acreage in Jackson and elsewhere in Mississippi. The Arkansas Natural Gas Corp. and the United Gas System are also said to be acquiring acreage which would indicate plans for considerable drilling and pipe line activity on their part.

Texas Gas Utilities Co. built natural gas lines from the Chittim Field in Maverick County, Texas, to Del Rio, 63 miles northwest of the field, and to Eagle Pass, 16½ miles southwest of the field, all welded construction and 60-foot joints. The system was completed toward the last of the year. The 63 miles to Del Rio is 10-inch and the line to Eagle Pass is 6-inch. The line to Del Rio really extends beyond Del Rio to the power plant of the Central Power & Light Co. on Devil's River. There are distributing systems in both Del Rio and Eagle Pass and plans of the company call for building additional line to other cities in that part of Southwest Texas.

Houston Oil Co., which has gas lines running from Southwest Texas Fields to Houston, had under construction late in the year a 10-inch gas line from the Agua Dulce Field in western Nueces, where the company owns considerable gas production, to Corpus Christi, where the company built a refinery and tank farm during the year.

In eastern Williamson County two short oil pipe lines were built from the Chapman Field, one line running to Thrall to a refinery there and one running to Taylor to a refinery there, the length of the lines being about 10 miles.

Construction Work in the Rockies

Natural gas development in the Rocky Mountain area went ahead on a considerable scale in 1930 with a total of approximately 635 miles of pipe line being constructed during the year in New Mexico, Colorado and Wyoming. The program for 1931, while not yet fully matured, indicates that construction during the year will be approximately twice as large as in 1930.

The principal natural gas project undertaken in New Mexico in 1930 was the construction of a trunk line from the San Juan Basin in the northwestern part of the State to Albuquerque, Santa Fe and Las Vegas by the Southern Union Gas Co. of Dallas, Tex. This company and affiliated interests early in the year obtained franchises to supply the three towns named and in April first work on the project began. Gas lease holdings were acquired in the Kutz Canon district in San Juan County, a deal was made with the Midwest Refining Co. and the Producers & Refiners Corp. for gas from their three wells on the Ute structure in the Ute Indian Reservation, and the Hope Engineering Co.'s small system from that district supplying Durango, Colo., also was purchased.

The major part of the system was completed in the fall of 1930 to Albuquerque and Santa Fe, but the line to Las Vegas will not be finished until the coming summer. The project called for approximately 312 miles of line. It started at Farmington, crossed the San Juan River over the Bloomfield bridge and then continued southeastward via Cabezon. The line from Kutz Canyon to Cabezon consists of 10-inch pipe and from that point to Albuquerque of 12-inch. The program also called for an 8-inch line from the Ute gas wells to the Kutz Canon line. Early in the spring gas was supplied to Farmington and consumers were given free service to October 1. The Albuquerque Gas & Electric Co., which supplied manufactured gas to Albuquerque, was acquired and the system converted over for the use of natural gas. The company purchased during the year at public auction government leases on 4,720 acres on the Barker Dome in the Consolidated Ute Indian Reservation which will be held for development when the gas is needed.

The Gas Co. of New Mexico, which is affiliated with Southern Union, turned gas into the mains at Clovis and Portales, New Mexico, and had other extensions in the eastern and southeastern part of the state under way.

No major construction for 1931 has so far been announced.

From Colorado Fields

The principal natural gas pipe line construction in Colorado in 1930 took place in the southwestern part of the State where the Colorado Gas & Utilities Co., of which A. J. Hardendorf is the active head, completed the first unit of a system representing an investment so far of better than $1,250,000. This company controls a block of 8,000 to 9,000 acres in the Stevens County, Kans., gas field. A trunk line 87 miles long, consisting of 6-inch and 8-inch pipe, was constructed from its gas wells on this block to Lamar, Colo., in Prowers County. A lateral, consisting of 54 miles of 4-inch line, was built from a junction with the main line at Johnson, Kans., in a southwest direction to Springfield, in Baca County, Colorado. Another lateral on the Kansas side consisted of a 14-mile 4-inch line into Syracuse. On the Colorado side a 4-mile 4-inch lateral was built into Holly and a 7-mile 3-inch line northward into Granada and Bristol. All the towns mentioned are now being served. The first franchise was secured by the company early in June and shortly thereafter the work on the system was started.

The Colorado Interstate Gas Co., which operates in this territory the trunk pipe line system from the Amarillo Field in Texas to Denver, constructed two extensions during 1930. One of these was a 28-mile 8-inch welded line from its main line at a point east of Pinon, in Pueblo County, westward to the plant of the Colorado Portland Cement Co. at Portland, in Fremont County. The other was a 3-mile 6-inch line from its main line at Sullivan to the Fitzsimmons General Hospital, at Aurora, near Denver. This hospital, which was built by the United States Government for the use of the army, is composed of 160 buildings with a population equal to that of a small city.

The Colorado-Wyoming Gas Co., a Cities Service subsidiary, constructed a 12.6-mile 6-inch high pressure line from its terminal serving Johnstown, in Weld County, to the town of Greeley in the same county. Natural gas was first served to Greeley on September 1, 1930. The Greeley Gas & Fuel Co. is the local distributor. The next most important construction by the Colorado-Wyoming company was a transmission line 8.8 miles long and consisting of 4-inch pipe built from its main line west of Denver to the town of Golden, in Jefferson County. In addition to serving Golden, this line also supplies gas to the Golden Fire Brick Co., and the Coors Porcelain Co., two important industrial plants. Short lines also were constructed from the main line west of Denver out West Colfax Avenue, to serve that community, and a connection from its main line to the city of Loveland, which now is being served with natural gas. The United States Army Post at Fort Logan, near which the company's main line runs, was given service on September 1.

The gathering system of the Mountain Fuel Supply Co. was extended a few miles from the Hiawatha Dome in Moffat County to the Bartram Dome, upon which two gas wells were completed during the year and gas is now being marketed through the main line into central Utah.

Several large projects are being developed with the expectation that construction will begin in 1931, but some of these have not yet reached a stage where details can be made available. The most important of the known undertakings is that of the Colorado Natural Gas Co., of which Arthur K. Lee, of Dodge City, Kansas, is the head. Last fall Mr. Lee entered into a contract with the city of Colorado Springs to furnish natural gas at wholesale to the city for distribution in its municipally-owned system. The gas, which is to come from the Stevens County, Kansas, Field, will be delivered at the city's limits and the agreement provides for the completion of the line by August 31, 1931. The project will require more than 200 miles of main pipe line. The company also has secured a franchise to serve Canon City, in Fremont County, through an option to purchase the local manufactured gas plant. The company's program calls for the serving of a total of 12 towns with the line from the Hugoton Field. It is expected that construction work will begin early in the spring.

The Colorado Gas & Utilities Co. will build two extensions, one a 6-mile 3-inch line to Hartman, and the other a 12-mile extension to Pritchett, both in the southeastern part of the State. This company and affiliated interests have tentative plans for additional construction.

The Colorado-Wyoming Gas Co.'s program for 1931 provides for the construction of a 17-mile 4-inch line from a point on its main line near Lafayette to the towns of Brighton and Fort Lupton and a short connection with a 4-inch line to the town of Longmont, which town will also be served with natural gas.

Wyoming

The principal natural gas pipe line construction in Wyoming in 1930 was limited to a few projects. The most important was the building of a 55-mile 8-inch line from the Billy Creek Dome in Johnson County to Sheridan, Wyo., via the town of Buffalo, by the Hope Engineering Co. for the Minnesota Northern Power Co., of Minneapolis. The line was completed and put into operation in September. Gas in Buffalo and Sheridan is distributed by a subsidiary, the Northwest States Utilities Co. These interests took over the Sheridan Gas & Fuel Co., the local concern in Sheridan. The gas is taken from the wells of the Carter Oil Co. on the Billy Creek Dome, which are owned by that company jointly with the Consolidated Royalty Oil Co. and the Western Exploration Co.

The New York Oil Co. built a 22-mile 4-inch line from a connection with its main line from the Sand Draw and Muskrat Domes in Fremont County northward to Fort Washakie and the settlements in the Shoshone-Arapahoe Indian Reservation in the same county. Communities supplied include Fort Washakie, Ethete and the St. Michael mission.

The Fort Warren military reservation, near Cheyenne, was served with natural gas for domestic purposes on October 1 by the Colorado-Wyoming Gas Co., which constructed a 12,500-foot 4-inch line from its main line south of Cheyenne to the Fort.

Several major projects for Wyoming are in the offing for 1931. How many of these will materialize is as yet uncertain. One of these, for which details are nearing completion and upon which construction will begin early in the spring, is the laying of approximately 400 miles of main line from the Muskrat and Sand Draw Fields in Fremont County, through Casper, Glenrock, Douglas and Glendo into western Nebraska by the North Central Gas Co., a subsidiary of the New York Oil Co. It will go at least to Bridgeport, Neb., and possibly farther. The plans provide for a lateral from Orin Junction, through Wheatland to Laramie. Franchises have been secured and are being sought in a number of cities and towns along the way and it is expected that gas will be supplied to the sugar factories in the North Platte Valley and possibly to an important iron mining in-

(Continued on Page 145)

LONG PIPE LINES TO TRANSPORT GASOLINE CONSTRUCTED IN 1930

The long-distance transportation of gasoline by pipe line, initiated by the Standard Oil Co. of New Jersey through the old Tuscorora Pipe Line Co.'s line westward from the Atlantic coastal refineries to the Ohio River, inspired Mid-Continent refiners and marketers to do likewise, and in 1930 the Great Lakes Pipe Line Co. was organized by the Continental Oil Co., Barnsdall Oil Corp., Pure Oil Co., Skelly Oil Co. and Phillips Petroleum Co., and the new company started the construction of an 8-inch pipe line beginning at Okmulgee, Okla., and destined to run to Des Moines, Iowa, with extensions to Minneapolis, Minn., and Chicago, Ill. This line will be in full operation by spring, and is already being used as far north as Kansas City. When completed it will be 1,440 miles long. The various companies interested in it will ship gasoline direct from their Mid-Continent refineries to their marketing points in the northern territory. The line has a capacity of 30,000 bbls. of gasoline per day. There will be 21 pumping stations, 11 of which have been completed.

The Phillips Petroleum Co. started the construction of an 8-inch line from Borger, Hutchinson County, Texas Panhandle, to St. Louis, Mo., via Kansas City, and this line was practically complete at the close of 1930 and was expected to be ready for full operation by February 1, 1931. The line is 740 miles in length and has a capacity of 30,000 bbls. of gasoline per day.

Magnolia Petroleum Co. in May completed the construction of a 60-mile 3-inch welded gasoline line from its refinery at Luling, Tex., to a terminal on the eastern outskirts of San Antonio, Tex. This is the first gasoline line to be constructed in Southwest Texas. The line was tested with 250 pounds for a period of two days while filled with water before being used for gasoline and showed no leakage loss whatever. The gasoline is pumped through the line with two 400-horsepower electrical units, one at Luling and one about the middle of the line west of Seguin.

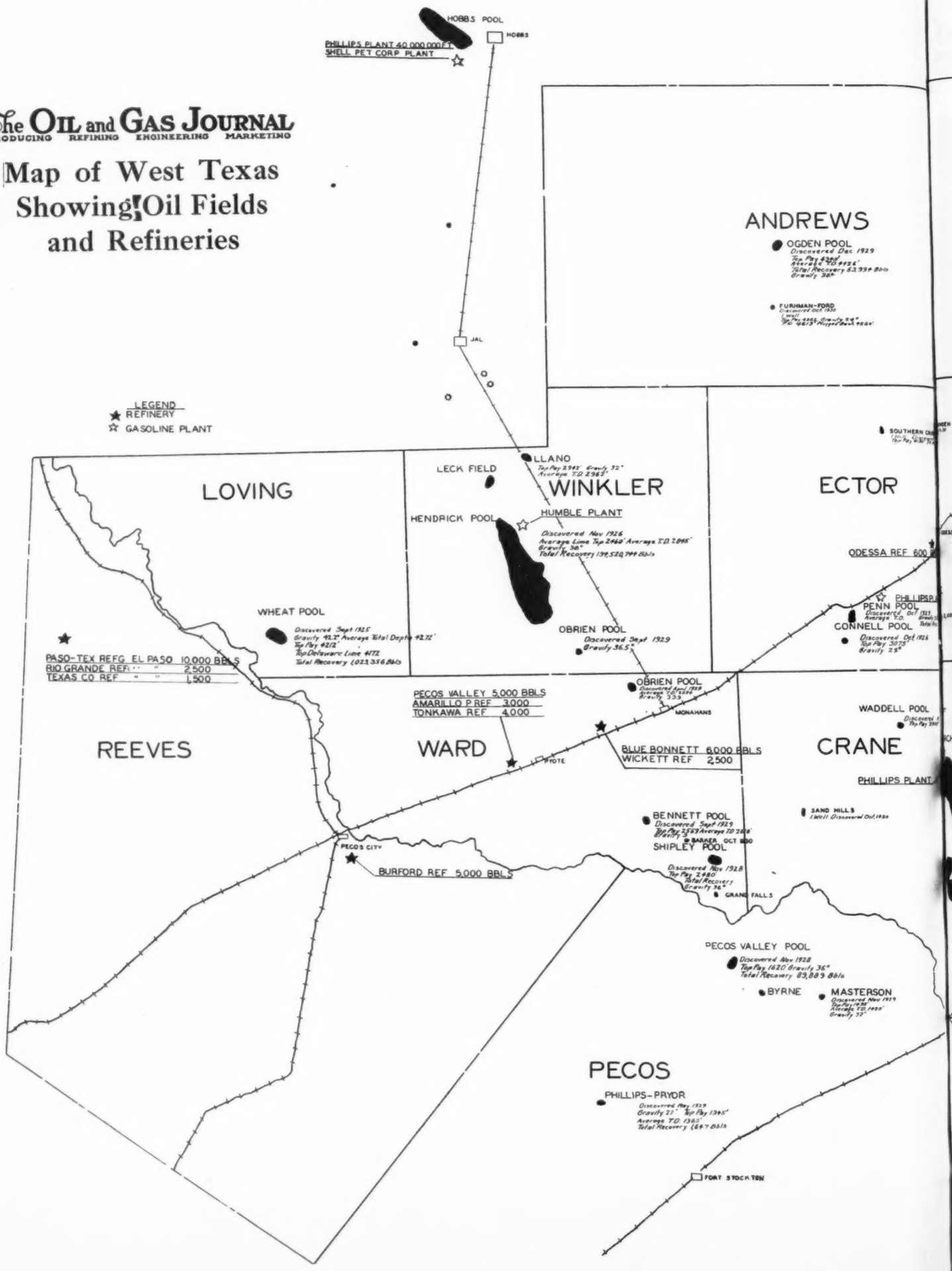
At the terminal loading racks for tank cars enable the company to ship to nearly every point in Southwest Texas over one line of railroad. There are docks also for loading tank trucks to serve the San Antonio territory and for 50 miles or so around.

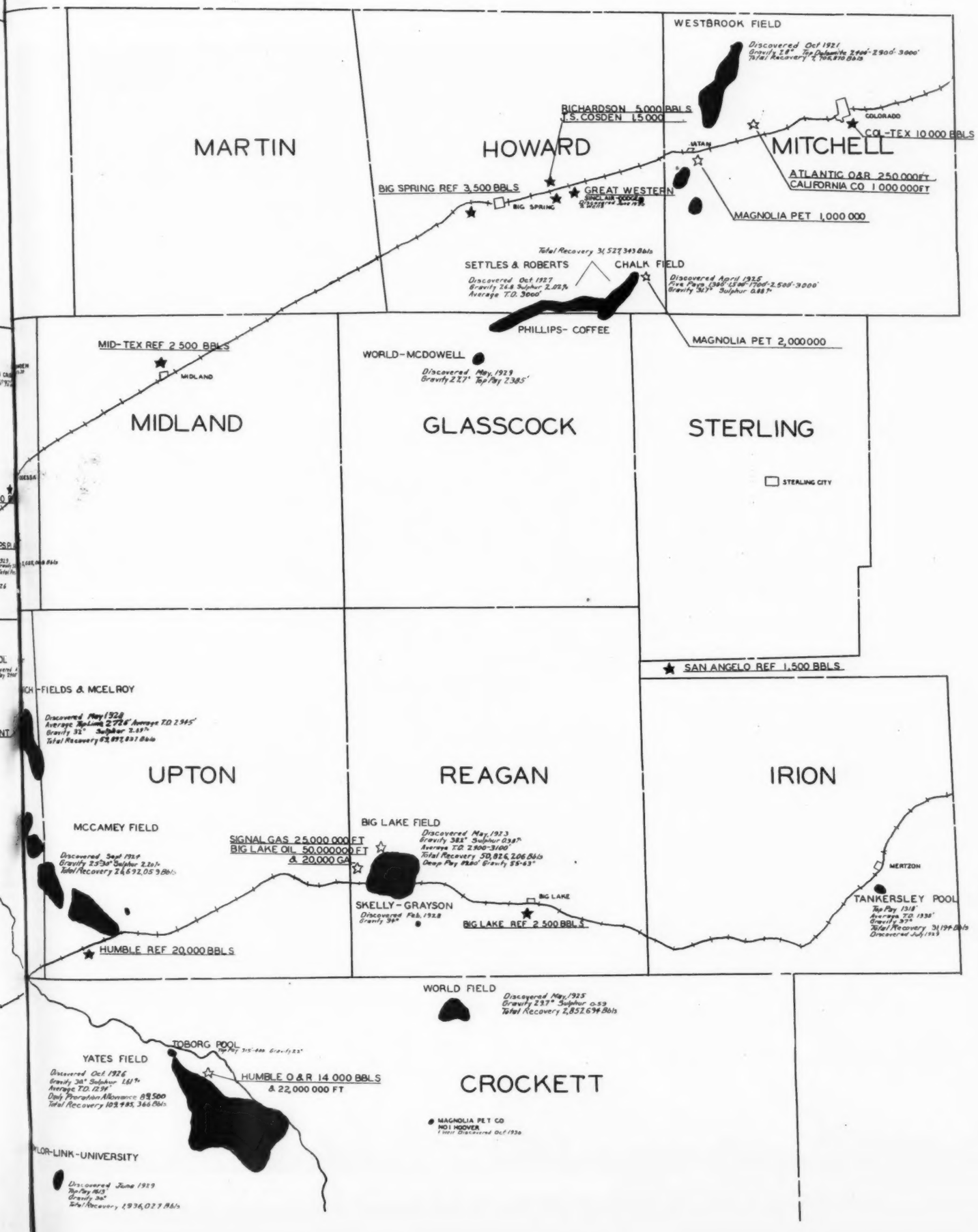
The Sun Oil Co. started the construction of a 6-inch pipe line for gasoline from Philadelphia, Pa., following the route of the old Crescent Pipe Line to Pittsburgh, Pa., and thence to Cleveland, Ohio. Work on this line was progressing rapidly and the line at the close of the year was approaching Pittsburgh.

In California the Union Oil Co. laid a 6-inch natural gasoline pipe line from Kettleman Hills to the Pacific Ocean at Avila in Obispo County. It was 88 miles in length, took seven weeks to construct and cost $700,000.

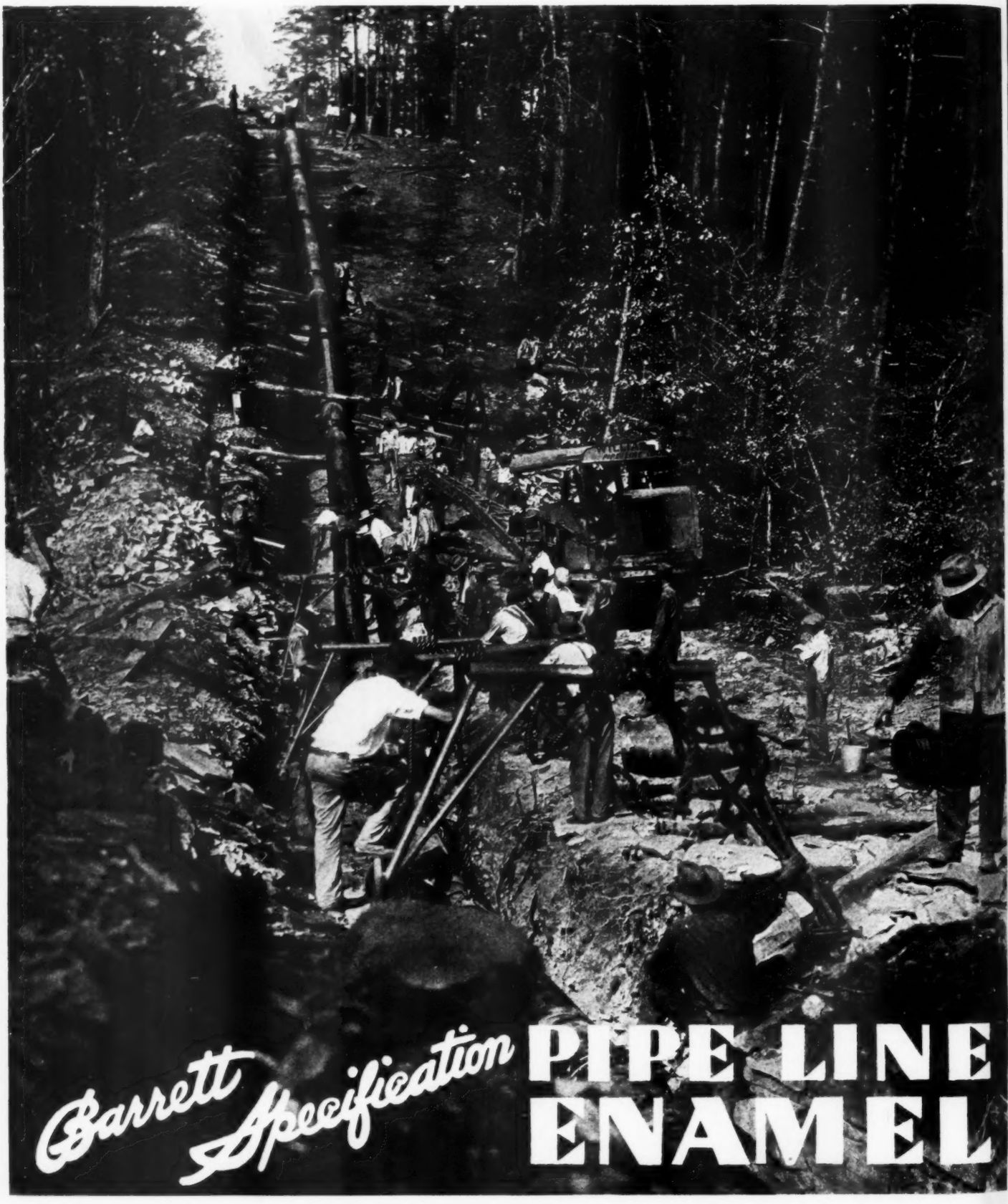
The Oil and Gas Journal
PRODUCING REFINING ENGINEERING MARKETING

Map of West Texas Showing Oil Fields and Refineries




MARTIN
HOWARD
MITCHELL
MIDLAND
GLASSCOCK
STERLING
UPTON
REAGAN
IRION
CROCKETT
WESTBROOK FIELD
Discovered Oct 1921
Gravity 38° Top Delaware 2400'-2900'-3000'
Total Recovery 2,705,870 Bbls
RICHARDSON 5,000 BBLS
J.S. COSDEN 1,5000
COLORADO
COL-TEX 10,000 BBLS
ATLANTIC O&R 250,000FT
CALIFORNIA CO 1,000,000FT
MAGNOLIA PET 1,000,000
BIG SPRING REF 3,500 BBLS
BIG SPRING
GREAT WESTERN
Total Recovery 31,527,343 Bbls
SETTLES & ROBERTS
Discovered Oct 1927
Gravity 24.8 Sulphur 2.03%
Average T.D. 3000'
CHALK FIELD
Discovered April 1925
Pres Pays 1348'-1374' 1700'-2,500'-3000'
Gravity 36.1° Sulphur 0.98%
PHILLIPS-COFFEE
MAGNOLIA PET 2,000000
MID-TEX REF 2,500 BBLS
MIDLAND
WORLD-MCDOWELL
Discovered May 1929
Gravity 27.7° Top Pay 2385'
STERLING CITY
SAN ANGELO REF 1,500 BBLS
H-FIELDS & MCELROY
Discovered May 1928
Average Top Line 2726' Average T.D. 2945'
Gravity 32° Sulphur 2.69%
Total Recovery 62,897,031 Bbls
MCCAMEY FIELD
Discovered Sept 1929
Gravity 29.9° Sulphur 2.2o%
Total Recovery 24,692,059 Bbls
SIGNAL GAS 25,000,000 FT
BIG LAKE OIL 50,000,000 FT
& 20,000 GA
BIG LAKE FIELD
Discovered May 1923
Gravity 38.2° Sulphur 0.38%
Average T.D. 2900-3100'
Total Recovery 50,826,206 Bbls
Deep Pay 9280' Gravity 55-63°
SKELLY-GRAYSON
Discovered Feb 1928
Gravity 34°
BIG LAKE
BIG LAKE REF 2,500 BBLS
HUMBLE REF 20,000 BBLS
MERTZON
TANKERSLEY POOL
Top Pay 1318'
Average T.D. 1330'
Gravity 37°
Total Recovery 31,194 Bbls
Discovered July 1925
WORLD FIELD
Discovered May 1925
Gravity 29.7° Sulphur 0.5%
Total Recovery 2,852,694 Bbls
TOBORG POOL
YATES FIELD
Discovered Oct 1926
Gravity 36° Sulphur 1.61%
Average T.D. 1259'
Daily Proration Allowance 89,500
Total Recovery 109,985,366 Bbls
HUMBLE O & R 14,000 BBLS
& 22,000,000 FT
MAGNOLIA PET CO
NO 1 HOOVER
1 Well Discovered Oct 1930
LOR-LINK-UNIVERSITY
Discovered June 1929
Top Pay 1613'
Gravity 36°
Total Recovery 1,936,027 Bbls

BARRETT has been manufacturing



22-inch Natural Gas Line protected with Barrett Specification Anti-Corrosion Products.

to RIGID specifications for 77 YEARS

In 1854 The Barrett Company started manufacturing products for waterproofing purposes. The success of these products soon brought nation-wide recognition to The Barrett Company as Waterproofing Headquarters. And now, for 77 years, this company has been manufacturing to rigid specifications — producing Barrett Underground Waterproofings for tunnels, dams, subways, etc., as well as the famous Barrett Specification Roofs and Tarvia.

Barrett Specification Pipe Line Enamel is a product of this 77 year experience. It has as its base the finest grade of straight run coal tar pitch —the soundest waterproofing agent known— manufactured by Barrett from carefully selected crudes. To this specially treated bitumen is added a plate-like *mineral reinforcement*.

Its flaky mineral particles, when combined with pitch, laminate and interlock, adding unusual tensile strength and toughness. Its type and structure make less of it necessary to retain the natural flow of the pitch—which means that there is more of the waterproofing agent—pitch —in each finished ton of Barrett Enamel. Finally, it is a reinforcement which is non-absorbent, nonporous, chemically inert and highly dielectric.

There is a Barrett Specification Pipe Line Enamel to meet each pipe line requirement—and *any order can be duplicated at any time.* Uniformity is assured by Barrett laboratory tests, data kept on every shipment—identification lot and batch numbers on every drum.

With your order, too, goes Barrett's unobtrusive and co-operative Service and Field Inspection. Quantity Surveys and complete information on Barrett products will be sent at your request.

Barrett Enamel is highly resistant to sudden and extreme changes in temperature and affords complete protection regardless of soil or climatic conditions.

The Barrett Company

40 Rector Street New York, N. Y.

OKLAHOMA'S FLOOD OF NEW PRODUCTION

(Continued from Page 119)

the Simpson sand. Phillips Petroleum Co. and others' No. 1 Crouch, NW cor. SW Section 5-6-5, swabbed 50 bbls. of oil an hour from the Simpson sand at 4,274 feet for four and one-half hours. It was drilled deeper to the Wilcox sand, where a hole full of water was found at a total depth of 4,402 feet and after several attempts to plug off the water the hole was abandoned. The well was located about 2 miles south of the St. Louis Pool, which is in Township 7-5.

Extensions in Logan County

Logan County had several important extensions and wildcat wells that were left as one-well pools. In October, Eason Oil Co.'s No. 1 Katscher, SW cor. NE SW Section 34-17-4w, flowed 522 bbls. the first 10 hours and 821 bbls. the next 24 hours. It was located several miles from any other oil production and it was curtailed to 30 bbls. an hour, with a back pressure of 40 pounds. The oil was found in what some believed to be the Layton sand at 4,918-42 feet. The company owned about 400 acres surrounding the well and with other operators owning acreage in the vicinity a unit plan of development was worked out preventing a drilling boom in the district. It was the only well completed in 1930.

In March the Prairie Oil & Gas Co.'s No. 1 Kendrick, SW cor. NW SE Section 21-18-4w, in the Crescent-Lovell Pool, in Logan County, found a new producing sand. The well flowed 178 bbls. of oil in 24 hours from sand at 4,987-93 feet. The well missed the regular producing sand at 3,900 feet found in other wells in the district. Development of the area was curtailed and the production prorated during the year.

New Pool in Western County

Development in the western part of Payne County was unitized; several companies pooled 640 acres of leases and only a few wells were drilled. Prairie Oil & Gas Co.'s No. 1 Rule, C NE NE Section 8-19-1w, flowed 1,574 bbls. of oil the first 24 hours from Misener sand at 4,859-64 feet. It was pinched in and was prorated 25 per cent of the potential, being allowed to make around 350 bbls. a day. After the third well had been completed in the area, further development was stopped until the oil industry improved. All the producing wells were being operated under the proration plan.

Magnolia Petroleum Co.'s No. 2 Young, NE cor. NW NW Section 22-21-2w, Noble County, opened a new area in the Misener sand. The well was estimated at 2,500 bbls. a day but was pinched to 900 bbls. a day with 400 pounds back pressure. The well was completed in January, and other new work was held back until the middle of the year. The north offset was completed for a 250-bbl. well and in December the same company extended production a half mile southwest by the completion of another Misener sand well making 2,740 bbls. of oil the first 24 hours. The well was Magnolia Petroleum Co.'s No. 2 Woolleson, NE cor. SE NE Section 21-21-2w. It flowed 274 bbls. the first hour from the Misener sand at 5,212-22 feet.

Peerless Oil Producing Co.'s No. 1 Wentz, NW cor. SW Section 22-22-1, Noble County wildcat, was completed in March, and made 105 bbls. of oil in 30 minutes when opened up after being shut in for a week. The well was put on pump and made 90 bbls. a day.

Oklahoma's Deepest Test

The deepest test in the State was completed in 1930 in Harper County. When completed, after having been plugged back, it made 50 bbls. of gasoline and 15,000,000 feet of gas a day. The well was Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Section 14-26-24w. It was drilled to a total depth of 8,583 feet, still in the Mississippi lime, but was plugged back to 5,350-5,400 feet and completed. It had a showing of oil at 6,711-16 feet in a rotary hole. The altitude on the surface was 2,275 feet, indicating the well was drilled to 6,305 feet below sea level. It had been drilling in Mississippi lime for 1,700 feet before being plugged back. At the close of the year the Empire Oil & Refining Co.'s No. 1 Bruce, C NE SW Section 12-25-20w, another wildcat test in Harper County, was drilling at 7,910 feet, with nothing showing, and was the deepest drilling test in the State.

Oklahoma Panhandle, long dormant, was one of the active leasing areas in the State during the year. The Argus Production Co. put 99,000 acres of leases on record in Texas County, scattered in different parts.

West Chandler's Deep Sand

Lincoln County's production was increased by large wells in the west Chandler Pool, and it soon became a major producing area and was curtailed and prorated in July. The first large well was Magnolia Petroleum Co.'s No. 2 Benedict, NE cor. SE NW Section 7-14-4, which made 4,920 bbls. of oil in 24 hours from the Wilcox sand at 5,072-79 feet. It was an old well drilled deeper from the 3,200-foot horizon. The area was drilled up until a potential production of 22,500 bbls. was reached in August and a proration plan was made effective curtailing the production to 25 per cent. Later the operating companies in the area, which were Magnolia Petroleum Co., Coline Oil Co., Prairie Oil & Gas Co. and Tom Slick Oil Co., all agreed to curtail the wells to 100 bbls. a day each.

The development of the southeastern part of the State was slow. Some operators blocked leases in Pittsburg, Latimer, Haskell and LeFlore Counties. Several gas wells were completed in the Quinton gas field in Pittsburg County. Wildcat tests were being drilled in the other counties.

Southern Oklahoma

Southern Oklahoma was active, new pools were found and older ones extended. Proration was recommended in several areas due to the large wells in the new areas and from deeper drilling. Several areas built up large potentials and were curtailed. As early as January a new test in the Palacine area in Stephens County found oil in a deep sand. Wirt Franklin Petroleum Corp.'s No. 2 Green, NW cor. SW SW Section 9-2s-6w, was pumping 250 bbls. a day. Dunmarr Oil Co.'s No. 1 Randle, SE cor. Section 8-2s-6w, extended production a half mile southwest. The well flowed 456 bbls. the first 19 hours with the gas estimated at 8,000,000 feet a day. The production was found in sand from 2,847-83 feet. As the result of the findings in these wells considerable activity started on adjoining properties.

An extension well was completed in the Comanche area, Stephens County, in July and new operations were immediately started and it developed into one of the most active districts in the southern part of the State. The first well to extend production was George Pace's No. 2 Dilley, NE cor. NW SW Section 27-2s-7w. It made 85 bbls. on the swab in nine hours from sand at 1,498-1,505 feet. Other wells were completed with an initial production as high as 1,500 bbls. a day.

Wells Deepened in Caddo County

The Cement Pool, in Caddo County, was another active district during the past year. Operators drilled old wells deeper and found large production in the deeper horizons. The flush production increased at such a rate that it was necessary to curtail it to 30 per cent of the potential in June. Another curtailment plan was made effective in September.

In February the Ramsey Petroleum Co. closed a series of deals whereby it secured between 5,000 and 6,000 acres of leases in the Cement Pool. The company plans to drill a Silicious lime test on the acreage at some future date. One of the larger wells completed in the deep sand was Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 1 E. M. Rowe, SW cor. NW NE Section 36-6-10w, flowed 100 bbls. an hour and was allowed to make 1,165 bbls. in 24 hours pinched. The oil was found in sand at 3,307-16 feet. The production was extended a half mile west by the completion of a gas well in the deep sand in July. Magnolia Petroleum Co.'s No. 3 Sanes, SE cor. NE NE Section 35-6-10w, made 51,000,000 feet of gas from sand at 3,406-20 feet. Another deep sand well was found on the east side of the field by the Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 9 Wade, SW cor. SE SW Section 2-5-9w. The well made 287 bbls. of oil in 24 hours from the sand at 4,067-78 feet, with the total depth 4,104 feet. It was the deepest oil production found in the pool during the year. In September, Mid-Continent Oil & Gas Co.'s No. 6 Lackey, NE cor. NW Section 11-5-9w, gauged 17,500,000 feet of gas a day with 1,800 pounds rock pressure from sand at 4,857-4,971 feet. It was the deepest producing sand yet found in the Cement Pool.

The Tatums Pool in Carter County is an extension of the Sholem Alechem Field. New producing wells were found in the pool almost daily in August and September. The field soon had an estimated potential of 25,000 bbls. a day and the area was prorated in August. Wells were found to produce as high as 2,500 bbls. a day from a sand found at 2,300 feet. The shallow depth in which oil was found made it attractive for operators to start tests and the area was one of the active ones in the southern part of the State. The field was extended in all directions and at the close of the year a test a mile and a half north of the field was being completed for an estimated 100 bbls. a day.

The Madill Pool in Marshall County was active and some expressed the opinion it was the most active shallow area in the State during the first half of the year. Wells were found in the area ranging from 10 to 250 bbls. a day in sands from 500 to 550 feet deep. The oil production was found in a sandy lime which some believe to be the Hunton lime. One of the largest producers was Magnolia Petroleum Co.'s No. 2 Coatesworth, NW cor. SW SW SW Section 30-5s-5, on the southeast edge of the pool, was completed for 250 bbls. of oil a day.

In the southwestern part of the State oil was found in an old gas well southwest of Sayre in Beckham County. A search for oil has been made in the area but only gas has been found. The oil was found in the Sayre Oil & Refining Co.'s No. 1 Porch, NW cor. SE Section 24-9-24w, Beckham County. The well was completed as a gas well about a year ago and the showing of oil was noticed while cleaning it out and it later started flowing at the rate of 100 bbls. a day. The well was completed at a total depth of 2,767 feet. Its completion started a leasing campaign, blocks were assembled and core drills were moved into the area. The oil well is located southeast of the main gas field, which is six years old.

OKLAHOMA

Completed Wells in 1930 by Counties

County—	Comp.	Prod.	Dry	Gas
Carter	97	45,340	20	1
Creek	244	10,376	84	38
Pawnee	98	3,304	37	11
Grant	16	35	8	7
Logan	19	7,072	7	1
Pittsburg	28	0	5	23
Garfield	11	1,698	5	2
Tillman	3	0	3	0
Cotton	86	5,099	17	1
Hughes	52	1,922	21	22
Pontotoc	81	7,843	15	1
Jefferson	22	1,912	5	0
Beckham	6	100	2	3
Sequoyah	2	0	1	1
Comanche	6	2	5	0
Cleveland	8	38,513	6	0
Grady	20	0	5	15
Muskogee	223	3,651	123	49
Pottawatomie	177	111,030	27	3
Kay	30	451	12	10
Caddo	54	11,143	15	7
McIntosh	14	0	11	4
McClain	2	46	1	0
Okmulgee	121	1,112	38	32
Okfuskee	103	3,468	38	16
Seminole	586	542,707	124	38
Kiowa	18	39	14	0
Canadian	1	0	1	0
Woodward	5	0	5	0
Noble	14	400	6	5
Oklahoma	628	4,774,757	16	23
Osage	190	9,120	62	28
Stephens	108	4,792	53	8
Johnson	1	0	1	0
Garvin	5	0	5	0
Atoka	1	0	1	0
Greer	2	0	2	0
Lincoln	41	25,416	22	6
Tulsa	50	2,470	32	4
Wagoner	99	196	62	24
Marshall	102	4,069	44	0
Le Flore	4	0	1	3
Payne	51	10,202	19	5
Latimer	8	0	2	6
Washington	4	25	2	1
Nowata	3	23	0	1
Craig	2	1	0	1
Bryan	2	0	2	0
Cimarron	1	0	1	0
Haskell	2	0	2	0
Cherokee	1	0	1	0
Harper	1	0	0	1
Texas	2	0	0	2
Washita	2	0	2	0
Coal	4	0	4	0
Murray	1	0	1	0
Roger Mills	1	0	1	0
Woods	3	0	3	0
Total 1930	3,466	5,628,234	1,002	460

Summary by Months

January	383	580,301	100	60
February	160	242,983	40	30
March	285	372,510	89	52
April	367	556,508	106	72
May	316	303,203	94	32
June	387	414,510	105	37
July	281	474,705	81	37
August	292	730,669	85	47
September	296	714,461	77	37
October	295	408,412	83	31
November	205	388,053	70	29
December	199	441,919	72	21
Total 1930	3,466	5,628,234	1,002	460
Total 1929	3,613	1,178,945	1,245	200
Difference	147	4,449,289	243	260
1928	3,679	1,016,000	1,227	450
1927	4,513	1,971,081	1,443	500
1926	5,352	986,502	1,735	490
1925	4,987	879,558	1,578	470
1924	4,814	1,211,466	1,308	400
1923	5,883	1,277,936	1,731	580
1922	6,148	1,190,165	1,428	570
1921	5,715	589,298	1,507	630
1920	9,097	773,900	2,036	720
1919	8,171	488,762	2,267	710
1918	8,367	372,308	2,100	730
1917	6,676	361,463	1,291	570
1916	7,700	518,888	1,136	530
1915	4,603	1,034,700	846	350
1914	8,297	973,550	1,324	520
1913	9,131	327,502	1,317	490
1912	5,982	213,217	820	440
1911	4,445	173,138	615	360
1910	4,370	179,973	547	390

INITIAL PRODUCTION RECORD BROKEN IN 1930

(Continued from Page 94)

upon with alarm, the fear being that many of the operators fortunate enough to find oil will be anxious to get it on the market regardless of what it will bring, and a big production there will have a strong influence against a continuance of the proration movement in the State as well as on the price structure.

A number of new pools were opened in Oklahoma, some of which were not developed and the same may be said of Kansas, particularly the Ritz, Voshell and Eastborough Pools. In the latter State the western and southwestern counties proved rich in natural gas for which there is a ready market with mammoth pipe lines running through or close to the gas producing regions.

On the Gulf Coast production was extended on salt domes already producing, and new dome structures were proved for the first time.

In Arkansas the small Urbana Pool was the sole new discovery and the Holly Pool was the only one opened in 1930 in North Louisiana.

In Montana the Border, Bannatyne and Dry Creek Fields were opened by the wildcatter and some quite important extensions and deeper sands were opened in Wyoming.

LEADING POOLS IN INITIAL PRODUCTION IN 1930

	Oil wells comp.	Initial prod. (bbls.)	Av. per well
Oklahoma City, Okla.	591	4,813,270	8,144
Van, Tex.	171	618,453	3,617
Lea County, N. M.	154	1,098,722	7,134
Elwood, Calif.	31	122,312	3,946
Ventura Avenue, Calif.	36	51,530	1,431
Kettleman Hills, Calif.	6	21,908	3,651
McPherson Co., Kans.	139	151,262	1,088
Sulphur, La.	16	25,020	1,564
Darst Creek, Tex.	230	318,747	1,386
Bruner, Tex.	12	14,800	1,233
Pecos County, Tex.	141	177,772	1,261
Greater Seminole, Okla.	571	653,737	1,145
Lincoln County, Okla.	13	25,416	1,955
Rusk County, Tex.	3	15,560	5,187
Total 14 fields	2,114	8,108,509	3,836
All others	19,118	1,847,326	97
Grand total	21,232	9,955,835	469

MEXICAN OIL TAXES

Mexican oil production and export taxes for January are unchanged from those of December, with a tax of 13.250 cents a barrel on light crude, 7.583 cents on heavy crude and 11.661 cents a barrel on fuel oil. Combined production and export taxes are 21.207 cents a barrel on light crude, 12.511 cents on heavy crude and 18.021 cents a barrel on fuel oil.

VAST MILEAGE OF GAS LINES IN 1930

(Continued from Page 139)

dustry at Sunrise. This company, which supplies Casper, Glenrock and a number of other towns with natural gas, is closely affiliated with the Columbia Gas & Electric Co.

Some competition in this territory is being presented by the Public Service Corp. of Nebraska, a Delaware corporation, which proposes to build an 18-inch 422-mile line from the Texas Panhandle fields into the North Platte district and into eastern Wyoming. At this writing it is seeking a certificate of convenience and necessity from the Wyoming Public Utilities Commission, as is likewise the North Central Gas Co.

Another major project which has not yet reached the stage where details are available is the construction of a system from the gas fields in the Big Horn Basin in northern Wyoming to Butte and Anaconda, Mont., to serve a number of towns in the last named State. The Montana Power Co., a subsidiary of the Electric Bond & Share Co., has franchises in a number of towns, but no gas production though, it is understood, contracts have been made with several independents with holdings in gas fields in the two States. The Ohio Oil Co. and the Midwest Refining Co., on the contrary, have large gas supplies available and are said to be negotiating for a similar project. Whether the two interests will get together for the construction of the project, or each for both build independent of the other, is as yet not known.

C. Frank Bautch and associates have been granted a franchise to supply the town of Lusk with natural gas from the Lance Creek Field. It provides that work shall begin by April 5 and the line completed by September 15. The plan provides for a 4-inch line. Source of the gas is not disclosed as at present the output of the field is being sold to the Huber Co., manufacturers of carbon black. Two other groups sought franchises in Lusk.

Utah

No important gas line construction took place in Utah during 1930, but it is expected that an important extension of the Western Public Service Co.'s system will take place during 1931. Authority has been secured from the state commission for building a line north of Ogden through Cache and Box Elder Counties by the Wasatch Gas Co., a subsidiary. This is part of the project for building into Southern Idaho and as far north as Pocatello. Another project will be the construction of a line south from Salt Lake City to Provo. Altogether the undertaking will involve about 200 miles of construction at a cost of $3,200,000 and it is expected that work will begin early in the spring and give employment to 1,000 men. The extensions are a part of the system which transports gas from southwestern Wyoming and northwestern Colorado to Salt Lake City and Ogden.

Gas Lines in Montana

In January, 1930, the Mountain Gas Co. completed the laying of the gathering system in the Bowes Field south of Chinook, in Montana, and all the wells in that field were connected to the line serving Bowes, Chinook and Havre, in Hill and Blaine Counties.

The Drumheller interests laid a pipe line from the Drumheller well, in the new Cut Bank gas field, to Cut Bank and the line is serving that city with gas. The line is 7 miles long and cost $50,000.

The Hope Engineering Co. started work in the spring of 1930 laying the 12-inch line from the Baker Glendive Field in eastern Montana to Williston, S. D. The Dakota-Montana Power Co. is the owner of the line and it was completed and the gas turned in by the last of July.

The Hope Engineering Co. laid a gas line from near Whitlash across the border into Canada and made connections with the wells in the Rogers Field in Canada, enabling Canadian gas to be transported to Montana cities for a market. This line was laid by the Hope company for the Northwest States Utilities Co. There is 5 miles of 6-inch gathering system, 18 miles of 8-inch and 37 miles of 10-inch. The length of this line, exclusive of the gathering system, is 55 miles.

The Gallatin Gas Co. (Ohio Oil Co.), laid an 8-inch line from the Dry Creek Field in Carbon County, southern Montana, to a junction with the Wyoming-Billings line of this firm. This line will carry the Dry Creek gas to Billings and intermediate points and is 9 miles long.

Prospective Work

The Dakota-Montana Power Co. is negotiating for a franchise for the city of Minot, N. D., and expects to extend its system to that point and eventually to continue its line to Minneapolis. The Montana Power Co. (Electric Bond and Share), has announced that a line would be laid this year to serve gas to Butte, Anaconda, Bozeman and Livingston. This line will cost $15,000,000.

The Minnesota Northern Gas Co. has purchased the manufactured gas plant at Missoula and will lay a pipe line and gas carrying system to serve that city and surrounding territory, in 1931.

Minneapolis capital is examining the situation in Regina, Canada, and expects to lay a pipe line from the Bowes Field in Montana to Regina to serve that city with gas, if permission can be had from the Canadian Government.

The Sabine Construction Co. of Pittsburgh, Pa., is contemplating laying a pipe line and gathering system from the Arnells Dome to Lewistown. This system will comprise about 25 miles of lines.

Pipe Line Work in East

Over a year ago, the Columbia Gas & Electric Corp., through its subsidiary, the Manufacturers Light & Heat Co., became the owner of two of the systems of 8-inch crude oil lines of the Southern Pipe Line Co., and one system of the old Pure Oil Pipe Line Co., both extending from West Virginia eastward along the West Virginia-Pennsylvania state line to York, Lancaster and Philadelphia. During the past year these lines have been cleared and put in shape for use as gas lines. The lines acquired now stand full of gas as far east as Coatesville, near Philadelphia, Pa. From there extending in a southwesterly direction crossing the Susquehanna River at Conawango dam, a 20-inch line has been built to Rockville, Montgomery County, Maryland. This 20-inch line will act as a pressure reducer and reservoir. From Rockville, 20 miles of 12-inch line was laid to Washington, D. C., and a contract made to supply natural gas to the Washington Gas & Light Co.

In addition, a new subsidiary of the Columbia Gas & Electric Corp., the Maryland Gas Transmission Co., has, with a small exception, completed a line extending across Maryland from Rockville, which will sell gas to companies in the State of Maryland and at the present time conferences are under way with the Consolidated Gas & Electric Co. of Baltimore for the sale of natural gas to some of the latter's subsidiaries. It is said to be contemplating sale of gas also to the Chesapeake Company, operating in Hartford and Cecil Counties, and the Patuxent Company, operating in Montgomery County.

On the western end of this system an old oil trunk line was purchased from the Eureka Pipe Line Co., which connected with gas reserves in Wetzel County, West Virginia. A 12-inch line was also built from the Pennsylvania-West Virginia state line to Waynesburg, Pa. The Southern Pipe Line Co. station, "State Line," was also acquired and refitted for a gas compressor station and is now completed with six 400-horsepower Cooper-Bessemer gas engines and direct connected compressors.

The system, with the exception of a very minute part, now stands ready for use. On the way East it is expected that gas will soon be delivered to towns in Somerset County, Pennsylvania, such as Myersdale, Addison and Somerset, and within the near future to other large cities en route and to Washington.

In connection with its general plan, this corporation proposes to reinforce its main gas transmission lines by a new natural gas trunk line from eastern Kentucky through Virginia to the Potomac River and to Washington. It is understood that this proposed line will be a 20-inch line and will tie up with the lines already in the general plan by looping around north through the Shenandoah Valley. This will then give the eastern part of the country from Washington and Baltimore two sources of supply, the Pennsylvania state line system and the Virginia line, which will give adequate reserves to that territory.

Natural Gas Lines in Canada

In Canada, the year 1930 witnessed considerable natural gas line work; and some important enterprises are foreshadowed for 1931.

In Ontario, the year was marked by important extensions of the Union Natural Gas Co.'s transmission system to serve the towns of Thamesville and Bothwell in Kent County and Florence, Inwood, Alvinston and Wyoming in Lambton County. These extensions rounded out the Union system in three southwestern counties. In addition to the transmission lines, complete distribution was provided in the communities mentioned.

The securing by Union Natural Gas Co. of a controlling interest in the City Gas Co. of London, Ontario, and the United Fuel Investments, Ltd., of Hamilton, Ontario, marked an extension of the Union company into the artificial gas field. Natural gas acreage near Cayuga has been acquired with some proven production which, it is understood, will be piped to Hamilton, involving a link of about 35 miles with existing pipe lines. The Hamilton company is, in turn, making some extensions to serve suburban communities.

The Dominion Natural Gas Co., which now serves a number of communities in southern Ontario with natural gas, is extending its system to Preston and will probably make other extensions in the coming year.

In the southwestern peninsula, the Union Natural Gas Co. has in recent years thoroughly overhauled and duplicated its transmission line from the Tilbury Field to the Border Cities; and has systematically improved its distributing systems, not merely there but in other communities served from this field.

Alberta Gas Lines

In the province of Alberta, two important lines were laid in 1930. One was an extension to the duplicate line of Northwestern Utilities, Ltd., serving Edmonton from the Viking Field. The duplicate line will be further extended, and possibly completed, in 1931.

In southern Alberta, 7 miles of line was laid to deliver gas from the Rogers-Imperial well to the Montana Cities Gas Co.'s system. This line connected at the international boundary with an extension laid on the Montana side.

The possibility that this line may ultimately be extended to handle gas from the Turner Valley Field is indicated by the fact that a 35-mile link in existing lines will give direct connection between the Turner Valley Field and the border.

The most important project foreshadowed for the coming year is the proposed pipe line of Tri-Cities Utilities, Ltd., of Regina. This line, some 357 miles in length, is planned to transport gas from the Kinsella Field in eastern Alberta to Saskatoon and Regina, with a side line of 32 miles to serve the city of Moose Jaw. Franchises have been granted the company for Saskatoon and Regina, subject to vote of the burgesses, and if this final approval is forthcoming the big project will be started within a few weeks.

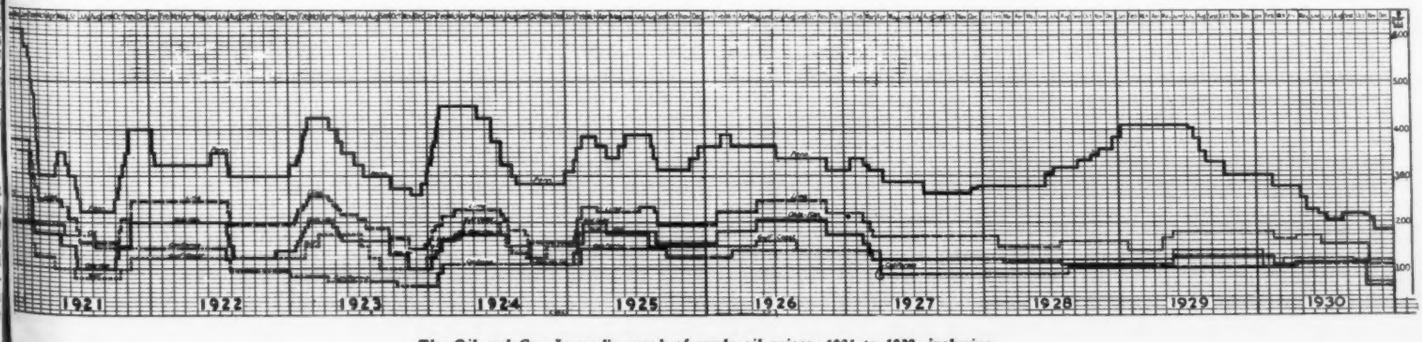
Two pipe line undertakings are conditional on the securing of adequate production in fields now being tested. In Manitoba, if drilling near Manitou secures a satisfactory gas production, a line will be laid to Winnipeg. In British Columbia the International Pipe Line Co. is drilling for gas and plans to market its production to Vancouver or, in the alternative, to communities in the State of Washington, where drilling is also being undertaken.

Lines From Kettleman Hills

An important gas line in California, constructed last year, was that of the Pacific Gas & Electric Co. and the Standard Oil Co. of California from Kettleman Hills Field to San Francisco Bay. The Southern California Gas Co. extended its system from the Midway-Sunset Field northward to Kettleman Hills, about 70 miles distant.

CRUDE STOCKS DECREASE

Pipe line and tank farm gross domestic crude oil stocks east of the Rocky Mountains decreased 2,896,350 bbls. in the month of December, 1930, according to returns compiled by the American Petroleum Institute from reports made to it by representative companies.



The Oil and Gas Journal's graph of crude oil prices, 1921 to 1930, inclusive.

GULF COAST'S NEW PRODUCTION RECORD

(Continued from Page 131)

abandoned. Production on the north was definitely proved, however, when Mills Bennett Production Co.'s No. 3 E. W. Barber, approximately 2,000 feet to the west and between the Morgan well and Humphreys' deep pool on the northwest, was completed flowing 1,250 bbls. choked in from a sand at 4,981-5,147 feet, and by Humphreys Corp.'s No. 1 Fitzgerald. It was the Barber well that gave an impetus to sub-salt exploration as it had drilled through 352 feet of cap rock and 1,646 feet of salt to reach the pay horizon, and by reason of the well being closer up on the dome it was the highest well geologically of any previous deep well of the field. The Fitzgerald well, a more recent completion, also drilled through a mass of cap rock and salt (salt 2,116-2,664 feet), and made a 1,000-bbl. well at 5,367 feet. It is in the vicinity of the Morgan well.

A short time before another deep sand area had been opened at Barbers Hill on the extreme west flank by Sun Oil Co.'s No. 1 Winfree, which at 5,327 feet, was good for 1,200 bbls. Three additional wells have been obtained in that area and between it and pools on the northwest and southwest, tests are under way to fill in the gaps in production. In addition to opening a new pool, the Sun well also proved the existence of a ledge of cap rock there by drilling through several hundred feet of this and back into formation.

Humble's Deep Sand

The third of the trio of leading producing fields on the coast was Humble, where deep sand development on the south flank early in the year ran daily output up to around 25,000 bbls. For a time this pool was one of the most active spots on the Gulf Coast and resulted in some very prolific producers but the area was rapidly proved up and with completions thinning down, production of the field slipped off sharply. However, about that time Sun Oil Co.'s No. 3 Bender, a wildcat on the extreme west side of the dome, came in flowing 1,500 bbls. daily from a comparatively shallow sand at 3,903 feet. This was followed by a new drilling play occasioned by numerous offsets required and resulted in the proving up of a long line of production.

The three fields of Refugio, Barbers Hill and Humble, out of a total of 54 fields, produced 25,427,834 bbls. of the 71,200,514 bbls. yielded on the Gulf Coast during 1930. This represented a percentage of approximately 36. The eight largest fields, including only those making above 3,000,000 bbls., had a total production of 46,870,434 bbls., or considerably more than half. All except two of these indicated increases over the output of the previous year. A comparison of the production of these eight fields follows:

Field—	1930 (Bbls.)	1929 (Bbls.)
Refugio	11,698,202	1,751,302
Barbers Hill	7,865,597	4,523,350
Spindletop	5,997,913	10,183,684
Humble	5,864,035	2,296,409
DeWalt	4,291,689	4,016,401
Pierce Junction	4,056,270	5,193,061
Raccoon Bend	3,935,292	2,082,595
Hull	3,161,436	3,488,869
Total	46,870,434	33,535,671

New Fields in 1930

From a standpoint of new fields, the past year in no way compared to that of the preceding year when 14 entirely new were opened. Only two fields can date their beginning in 1930, these being Moss Bluff, Liberty County, and Bloomington in Victoria County. A third field, Mykawa, Harris County, found its first commercial oil production the past year but two gas wells, one of which sprayed some oil, preceded this in 1929.

Production at Moss Bluff was opened January 2, 1930, in Humble Oil & Refining Co.'s No. 6 Sterling, located on the extreme east edge of the dome. This well, which flowed 864 bbls. in the first 24 hours, was shut in after the first day's flow and has not been opened since for production. Sand in this well was at a total depth of 5,666 feet.

Bloomington, the other new field, so far has yielded only two dry gas wells, but as the majority of other fields in the lower Gulf Coast country in which this field is located, were ushered in by dry gas wells under similar conditions, operators are optimistic over the possibilities of oil. The discovery well, Lion Oil & Refining Co.'s No. 1 McFaddin, M. J. Traviesa Survey, Victoria County, was completed early in June for 25,000,000 feet of gas, 1,650 pounds pressure, from a sand at 3,747 feet. Location was made immediately for No. 2 McFaddin, 660 feet east of No. 1. This was started as a deep test for oil, and passed up the gas sand with difficulty, and drilled to a total depth of 6,454 feet where it was dry. After plugging back to the gas sand at 3,736 feet, it set 5 3/16-inch casing at 3,705 feet and was completed for 35,000,000 feet of gas, 1,275 pounds pressure, on a quarter-inch choke.

Opening of Mykawa

Although Mykawa, Harris County, has not been classed as a 1930 discovery due to the completion of two gas wells during 1929, one of which started spraying some oil, and due to other indications of a field, it was not until October of 1930 that the first commercial oil producer was obtained following the drilling of a series of failures. That well was Humble Oil & Refining Co.'s No. 3 Minnetex, which flowed an estimated 500 bbls. initial from sand at 4,826-73 feet.

Mykawa is one of the many torsion balance areas checked in the geophysical play which followed the opening of the DeWalt Field in March of 1928. The success which was credited to geophysics at DeWalt stimulated a geophysical exploration in which as many as 120 prospects were reported found. While many of these have been proved as fields and domes, it has been learned that all geophysical domes are not as easily proved as that at DeWalt.

Despite a decrease in work, 15 new geophysical prospects were reported in 1930, as shown in an accompaning tabulation. In this connection, 14 of the 15 have completed first tests or first tests now are drilling. So far none of these has been proved up either as a dome or a field. However, during the year, three additional geophysical prospects were definitely proved as salt domes by the drill, these being Danbury in Brazoria County, Lake Grand Ecaille in Plaquemines Parish, Louisiana, and Bayou Choctaw in Iberville Parish, Louisiana.

Although the list of actual new fields opened during 1930 was small, indications of additional fields were given in a number of other areas, chief of which were on what is known as the Rose Dome, Plaquemines Parish, Louisiana, Caillon Island, Terrebonne Parish; Shepherds Mott and Citrus Grove, Matagorda County, and Cameron Meadows, Cameron Parish, Louisiana.

Substantial Extensions

Included in developments of the year were substantial extensions at Lockport, East Hackberry, Starks, Vinton and several other fields. At Lockport, Union Sulphur Co. drilled a wildcat, No. 1 H. J. Moss, approximately 2,000 feet west of the Lockport Field of Calcasieu Parish, and found sand at a total depth of 4,814 feet, completing the well for 4,814 feet. This started a new development in that area which has resulted so far in the addition of three good wells and one failure, production being from three different sands.

At East Hackberry, which was opened in November, 1927, and where chief development took place during 1928 in sand around 3,900 feet on the south side of the dome, Calcasieu Oil Co. early this year extended the field some 1,200 feet north in its No. 17 Watkins. This well, in a sand at a total depth of 2,712 feet, somewhat higher than in the original field, was completed flowing 1,600 bbls. daily. Since then there has been a steady proving up of this area bringing the field to the mouth of Kelso Bayou, fronting on Calcasieu Lake.

The opening of a shallow sand on top the dome at Starks, Calcasieu Parish, Louisiana, resulted in shift of development there from the deep sands flanking the dome on north and northeast where only mediocre production had been obtained in the several years of prospecting. Early in the year Texas Gulf Sulphur Co., which was drilling for sulphur in the shallow cap rock area, encountered several sands above the cap showing oil, and immediately Gulf Refining Co. and Standard Oil Co. of Louisiana, which hold the oil rights jointly, started a shallow drilling program which has resulted in a series of small pumpers between 500 and 1,100 feet.

Shell Petroleum Corp. made several important extensions at its Black Bayou Field in northwestern Cameron Parish. Two deep wells, No. 15 Watkins and No. 1 State, on the south and southwest sides of the dome, respectively, completed late in October, definitely proved those areas for production. The former, in a sand at 4,402 feet, came in flowing 1,200 bbls. daily on a ¾-inch choke with 445 pounds pressure. The State well flowed 943 bbls. in the first 24 hours on a ¾-inch choke from sand at 5,175 feet. Previous operations had resulted in several small cap rock pumpers, a short-lived deep rock producer on the north flank and another deep well on the southeast side.

Important extensions also were made at Raccoon Bend, Austin County, Texas, where Humble Oil & Refining Co. is conducting a conservative development program. Production was moved several thousand feet to the eastward and out of Austin County into Waller County the middle of the year by Humble's No. 2-B Hardy. The completion of several additional producers in that vicinity has fairly definitely proved the new area. Raccoon Bend has proved one of the largest fields in area on the Gulf Coast.

At Sweet Lake, Cameron Parish, Louisiana, Pure Oil Co. opened a new deep horizon in its No. 9 Yount Lee Oil Co., which at a total depth of 6,813 feet came in flowing 1,350 bbls. on a ¾-inch choke. This well, the fifth at Sweet Lake although only one other is producing at this time, since has proved one of the most consistent wells in the field and has maintained a virtually constant flow around 1,150 bbls. daily.

Tested Its Seven Domes

The Texas Company kept up a steady development program on each of its seven domes in southern Terrebonne Parish. Outstanding among these domes was Lake Barre, where five consecutive tests have resulted in good wells. The discovery well, No. 2 State-Lake Barre, was completed in September of 1929, in sand at 3,849 feet. Three additional wells were brought in during 1930.

At Saratoga, Rio Bravo Oil Co., has built up a consistent production in a shallow sand at 500 feet. While Saratoga is one of the oldest fields on the coast and the sand is known to have existed for years, this year marked the first real attempt to prove it up. In this sand a series of wells have been completed which have been paying off in steady output of good Grade A oil. The horizon is being developed on conservative methods and produced by repressuring operations.

The year was marked by a decided effort at deeper drilling not only around the older fields but also in most of the wildcats put down. All depth records of the coast were surpassed by The Texas Company's No. 5 Rayne Heirs, southeast of the old Jennings Field, which went to a total depth of 8,730 feet. This test is just southwest of Yount Lee Oil Co.'s Housierre-Latrielle wells, which at 7,400 to 7,600 feet are the deepest producing wells on the Gulf Coast. At Humble, next to the deepest test on the coast was put down, this being Benedum & Trees' No. 1 Foley, on the south side of the field, which went to 8,181 feet and was abandoned. At Refugio, Mission Drilling Co.'s No. 1 Moss-Heard, Block 111 of the townsite, was drilled to 8,120 feet in an effort to find the Jackson. This test, started as an offset to a 6,400-foot producer, failed to find commercial production in any of the several horizons of the field. It then was carried on down as a formation test as no well at Refugio had definitely been determined as being out of the Oligocene. This test also failed to find the Jackson.

Summary of completed wells in 1930

GULF COAST

Field—	Comp.	Prod.	Abd.
Texas			
Barbers Hill	131	92,266	13
Batson	28	343	11
Big Creek	13	3,717	7
Blue Ridge	17	2,330	6
Boling	8	159	4
Clay Creek	17	2,155	8
Damon Mound	5	500	4
DeWalt	15	8,510	0
Esperson	38	12,279	6
Fannett	8	400	6
Goose Creek	13	498	8
Hankamer	11	7,750	2
High Island	7	6,540	1
Hull	48	16,751	6
Humble	95	62,698	19
Liberty	24	1,490	10
Lost Lake	8	1,270	4
Markham	2	205	0
Nash	2	0	2
North Dayton	16	7,380	7
Orange	12	1,644	2
Orchard	7	6,230	0
Pierce Junction	45	26,180	11
Port Neches	4	2,740	1
Raccoon Bend	48	10,057	11
Refugio	195	61,440	38
Saratoga	28	688	7
Sour Lake	15	493	5
Spindletop	71	25,315	22
West Columbia	6	1,519	2
Miscellaneous	128	6,894	115
Total	1,065	370,441	336
Total, 1929	1,380	522,128	456
Difference	315	151,687	120
South Louisiana			
Anse La Butte	3	0	3
Bayou Blue	8	900	2
Bayou Boullon	5	2,480	3
Edgerly	15	295	9
Hackberry	47	20,713	22
Jennings	16	2,492	8
Lockport	15	5,595	2
Port Barre	15	9,750	5
Sorrento	4	700	2
Starks	11	1,421	3
Sulphur	21	25,020	5
Sweet Lake	3	1,650	1
Vinton	32	25,642	6
Welsh	3	15	2
Miscellaneous	98	7,915	88
Total	296	104,588	161
Total, 1929	353	81,625	192
Difference	57	22,963	31
Total Gulf Coast	1,361	475,029	497
Total, 1929	1,733	603,753	648
Difference	372	128,724	151

Completions by Months

Month	Comp.	Prod.	Abd.
January	125	58,058	46
February	82	34,385	27
March	126	55,993	41
April	130	39,812	50
May	124	45,786	42
June	85	31,259	26
July	171	51,700	68
August	136	47,617	46
September	93	23,987	41
October	113	38,657	34
November	94	30,600	44
December	82	17,175	32
Total, 1930	1,361	475,029	497

Geophysical Prospects Found on Gulf Coast During 1930

(b) Texas

The following shows the prospect, county, survey, discovery company and result of first test:

Austin Bayou: Brazoria County, Henry Austin Survey, Rycade-Amerada; first test abandoned.

Alleyton: Colorado County, John McCrosky Survey, Humble-Gulf-Pennsylvania; first test abandoned.

Citrus Grove: Matagorda County, J. Criswell Survey, Cockburn Oil Co. (Empire G. & F.); first test drilling.

Cove: Chambers County, Charles Tilton Survey, Pure Oil Co.; first test abandoned.

(a) Fresno: Brazoria County, Charles Heywood Survey, The Texas Company; first test drilling.

Green Lake: Calhoun County, J. P. Tilley Survey, The Texas Company; first test abandoned.

Heiskell: Liberty County, Joseph Degat-T. Dorsett Survey, Rycade Oil Corp.; first test abandoned.

McFaddin: Jefferson County, T. & N. O. No. 234 Survey, Humble Oil & Ref. Co.; first test drilling.

McFaddin-White: Jefferson County, T. & N. O. Nos. 362-70 S. C. Cartwright Survey, Humble Oil & Ref. Co.; first test, none.

Mad Island: Matagorda County, G. Wheelright Survey, Watts Oil Co.; first test abandoned.

Satsuma: Harris County, J. E. Oc

ra Survey, Cranfill-Reynolds Co.; first
t abandoned.
Vidor: Orange County, E. Lewis Sur-
y, Gulf Prod. Co.; first test drilling.

Louisiana

Carencro: LaFayette Parish, Section
8s-4e, Pure Oil Co.; first test aban-
ned.
Franklin: St. Mary Parish, Section
1-14s-10e, The Texas Company; first
t abandoned.
Point Au Fer: Terrebonne Parish, Sec-
n 12-21s-12e, Freeport Sulphur Co.;
st test abandoned.

(a)Discovered late in 1929 but not
ade known until 1930.
(b)In addition to list Rycade Oil Corp.
cked a prospect east of Stratton
dge, Brazoria County, which may or
y not be same dome as Stratton Ridge
me.

OIL HAD A HECTIC YEAR IN CALIFORNIA

(Continued from Page 100)

5 cents per barrel. Playa Del Rey's
oduction for the year 1930 was well
der 5,000,000 bbls., which represented
return to producers of not more than
,000,000. At least $10,000,000 has
en expended in development work at
aya Del Rey up to the present time.

Kettleman Hills in 1930

The Kettleman Hills Field of Kings
unty produced slightly in excess of
00,000 bbls. in 1930 and indications
int to a still larger production in 1931.
ude oil from this field is the equivalent
approximately 2 bbls. of normal crude
due to its high gasoline content. The
bstantial quantity of natural gas pro-
ced by Kettleman Hills is also an
portant factor because it yields when
ated on an average 1 bbl. of natural
soline for each 2 bbls. of crude oil
oduced. The Capitan Field of Santa
rbara County produced 15,295 bbls.
ring the year 1930 but could have great-
exceeded this figure under ordinary
nditions. No oil moved out of this
ld into the commercial market due to
rtailment work and the absence of pipe
e facilities. Production for the field
ring 1930 represents oil produced dur-
g production tests and for the purpose
establishing the field's actual poten-
al.

Severe Gasoline War

California has had a number of gaso-
e wars during the past 10 years but
e price war of 1930 was probably the
ost disastrous bid for gallonage ever
itiated. It lasted longer and was more
rious than any of the others because
e bottom practically dropped out of the
ice structure. The Standard Oil Co.
maxed this drastic price war by re-
oring the price of gasoline to its orig-
al status on July 12, 1930. During the
progress of this costly competitive condition extending over a period of several months, gasoline prices declined far below the actual cost of manufacture and at one point during the height of the gas war motorists were sold gasoline for 3 cents per gallon. This is just the amount of the state gasoline tax and indicates that automobilists were given gasoline free. When the Standard restored gasoline prices issued an announcement stating that "the events of the past month, the company believes have demonstrated to the oil industry that indiscriminate price cutting benefits neither the supplier nor the dealer and that it must now be realized that orderly marketing conditions and stabilized prices need the cooperation of all of those engaged in the oil business. It is the hope of the company that this step will not only bring order out of chaos but will result also in stabilization with consequent benefit to the oil industry and to the general welfare and prosperity of the Pacific Coast. Only prompt termination of the price war which has been raging on the Pacific Coast can save the oil industry and many thousands of persons engaged in the sale of petroleum products from catastrophe. So far as crude oil is concerned producers have done their share throughout California. They have cooperated to confine the production of crude oil to the demand and to conserve for future requirements this invaluable resource, the waste of which is indefensible. This is only the first step and it loses its effectiveness if manufacturers and marketers of the refined products of petroleum do not similarly refrain from overproduction through the withdrawal of crude oil already in storage. Laws enacted nearly 40 years ago to meet different conditions have been interpreted to prohibit agreements to curtail the production of refined products as well as agreements to regulate the price structure under which they are sold. Nevertheless, much can be accomplished if those engaged in the industry will use their individual efforts to stabilize marketing conditions for gasoline and if they will practice fair dealing. Without a production of gasoline restricted to the demand and without stabilized marketing conditions for the product the curtailed production of crude petroleum will be only an idle gesture and the conservation of oil so earnestly supported by the Federal Administration will be doomed to failure."

Widespread Exploration Work

Exploration work was general in 1930, extending all the way from northern California to the Mexican border on the south. This work was not very successful, however, as it only resulted in the discovery of one new field. One other area, Coal Oil Point in Santa Barbara County, took on a very encouraging outlook late in December when the Bolsa Chica Oil Co. concluded drilling operations in the Vaqueros oil sand in its tideland wildcat at 4,191 feet. The well subsequently tested wet, however, and its potentiality was still undetermined at a late hour. This wildcat has exceptional promise and should be watched with care as it may open up a new field in that area. Coal Oil Point is located about 2 miles east of the Elwood Field and lies entirely out in the ocean, if the geology of this area has been interpreted correctly.

The General Petroleum continued its exploration work on the More ranch in the Goleta area about 5 miles east of Elwood but had not proven this area definitely productive up to the end of the year. The General Petroleum's first two tests on the More ranch in this section were gassers, although No. 2 More was making about 100 bbls. of high gravity oil which might have been a condensate at the time it was shut in. Both of the first two wells had to be mudded off and shut in because of the tremendous gas pressure which built up. The third hole, No. 3 More, was rotating ahead at 4,175 feet in a brown shale at last reports. The company instituted exploration work in this immediate area in 1929, along about the time it started drilling operations in the Capitan Field, which it discovered to be productive during the latter part of 1929. The Continental Oil Co. disproved the Carpinteria area along the Santa Barbara seacoast and quitclaimed its leases in this section during 1930. The Continental's first test at Carpinteria blew in as a tremendous gasser killing two or three of the crew before it was mudded off and shut in because of the hazard which it presented. The second and third tests were both dusters.

A little further up along the coast line, the Shell drilled a deep test just north of Summerland which likewise was unproductive. Deep zone development in the old Summerland Field looked rather promising for a time but the failure of these wells to hold up and show clean production made the lifting cost practically prohibitive. The Standard tried its luck at both Casitas and Point Arguello in 1929 but both areas were found sterile and subsequently eliminated as potential oil territory. The Standard's third test in Santa Barbara County was located at Point Conception and, while the company has not yet concluded work in this area, the outlook is so discouraging that an early abandonment is expected. The Union drilled two dry holes in the Huasna area of San Luis Obispo County during 1930. These tests, one in Section 34-32-15 and the other in Section 12-32-14, were on separate anticlines. The Midwest also prospected this section of the State without success in 1930.

In Ventura Basin

Several deep tests were drilled in the Ventura Basin during 1930 but no important discoveries were made. The Chanslor-Canfield Midway Oil Co. may, however, have found something of importance midway between the Rincon and Ventura Avenue Fields but this is conjectural at the present time. The company's wildcat in this area has cored oil sand but attempts to develop commercial production at 7,775 feet have not been successful. The situation is so promising, however, that the Continental Oil Co. has deemed it necessary to drill a deep test on a large lease which it has about a mile away from the Chanslor-Canfield Midway's wildcat. In the Saticoy district of Ventura County, the Standard drilled a deep dry hole in Section 10-2-22 and subsequently pulled out of the area. The Prairie Oil & Gas had reached a depth of 8,190 feet in No. 1 Sexton, east of the Ventura Avenue Field in Section 30-3-22, at the close of 1930 and drilling operations were still under way in this project late in January, 1931.

There were a number of deep tests drilled in the San Joaquin Valley during 1930 but none of them, with the exception of the Shell's discovery well at Mountain View in the Weed Patch area, was of special significance. In the Rosedale area of Kern County the General Petroleum's test in Section 23-29-26, and the Elmer Oil Co.'s wildcat in Section 23-29-26, were both abandoned as dusters. Two deep dry holes were also drilled and abandoned in the Edison district northeast of the new Mountain View Field. These tests were drilled by the Petroleum Securities Co. and The Texas Company in Section 23-29-29. The Buttonwillow area also received consideration by wildcatters in 1930 and, although the Nordon Oil Corp. suspended operations in its wildcat in Section 7-29-24, at 6,583 feet shortly after 1931 made its advent, the Superior Oil Co. is still at work.

The Shell Oil Co.'s No. 1 Williams, a deep test in the Semitropic region of Kern County, is probably the most important wildcat under way in the San Joaquin Basin at the present time. This wildcat made considerable hole during 1930 and it was still going ahead late in January, 1931, at 9,090 feet. This is the deepest test under way in California and is expected to break all drilling records before this resume gets into print unless mechanical trouble should develop at the last minute. The Petroleum Securities disproved the Huron area of Kern County with a deep dry hole in Section 28-20-16, and the Rio Grande proved the Kerman district unproductive by a test in Section 14-13-17. The Union failed to develop commercial production in the San Emidio area of Kern County in Section 5-10-21, and the Standard, which was also testing out this district, pulled out about the same time. The Union and Standard pulled another double act by drilling two dry holes in the King City area of Monterey County. The former's wildcat was located in Section 8-22-8, and the latter's test in Section 23-22-7.

No Discoveries in South

Wildcat exploration in southern California during 1930 was negative as far as any important discoveries are concerned. The Continental Oil Co. drilled a deep dry hole midway between Long Beach and Seal Beach in Section 34-4-12, nothing resembling production being logged from the grass roots down. In the Watson area of Los Angeles Basin the Archer Oil Co. failed to get production in a deep test in Section 17-4-13 and consequently abandoned work. The Shell Oil Co. made another effort to find a new field in the San Fernando district during 1930 but the attempt was unsuccessful. A number of wildcats were drilled in the Puente district during 1930 and several additional holes will be spudded in there during 1931. Wildcat exploration is expected to continue on an aggressive scale in California during 1931 but work will probably be more selective in character. The San Joaquin and the coastal area will probably receive careful attention, while southern California will be more or less neglected except for the areas, Puente, Newhall and Hermosa Beach, already mentioned.

There were 755 new wells completed

CALIFORNIA DAILY PRODUCTION BY DISTRICTS, JANUARY-DECEMBER, INCLUSIVE

Districts—	Daily average production of crude oil, January-December, inclusive—								
	1930	1929	1928	1927	1926	1925	1924	1923	1922
ern River	*14,657	*16,683	*13,856	*16,708	*11,814	*16,170	18,506	18,674	20,047
ount Poso	*10,641	*5,003	*147	*110	*127	.....	.....	.....	.....
ruitvale	*2,475	*1,629	*365	.....	.....	.....	.....	.....	.....
ound Mountain	*3,274	*613	*121	24	.....	.....	.....	.....	.....
cKittrick	4,081	4,681	4,933	5,084	5,373	5,732	5,723	*6,005	6,623
dway-Sunset	*84,348	*69,343	*74,629	*86,769	*93,065	*101,160	*102,363	*76,173	81,356
k Hills	*18,007	*17,406	*22,151	*27,597	*33,679	*32,798	*37,130	*22,306	32,578
st Hills-Belridge	*3,589	*4,390	*4,171	*4,151	*4,640	*4,740	*4,170	*5,051	7,712
alinga	*9,241	*9,750	*12,719	*19,601	*19,989	*21,236	*27,713	*14,276	25,094
ettleman Hills	17,012	5,348	546	.....	.....	.....	.....	.....	.....
heeler Ridge	601	685	900	1,027	1,019	945	935	352	.....
atsonville	62	62	60	57	57	57	58	58	56
anta Maria	*3,159	*4,208	*5,578	*5,477	*5,075	*7,114	*7,808	*8,229	10,405
apitan	*69	8	.....	.....	.....	.....	.....	.....	.....
mmerland	323	257	123	136	128	132	145	145	133
lwood	*40,016	*25,852	2,446	238	.....	.....	.....	.....	.....
anta Barbara	35	36	.....	.....	.....	.....	.....	.....	.....
con	*2,749	*3,267	2,958	16	.....	.....	.....	.....	.....
ntura Avenue	*47,927	*57,355	*51,694	*48,791	40,536	19,176	5,005	3,899	1,877
ntura-Newhall	*4,855	*5,087	5,728	6,021	6,039	6,203	5,979	6,245	6,386
os Angeles-Salt Lake	1,496	1,514	1,532	1,728	1,852	2,005	2,480	3,266	3,447
hittier	*1,416	*1,544	1,672	1,810	2,044	2,035	2,080	1,768	1,966
llerton	*12,119	*13,189	*15,691	*19,203	*19,144	*12,278	*11,256	*11,136	12,364
yote	*10,658	*11,441	*13,393	*14,101	*16,522	*19,562	*15,529	*6,706	19,179
anta Fe Springs	*121,237	*209,527	43,973	41,517	47,799	51,971	72,130	218,579	30,227
ontebello	*7,432	*10,022	11,939	15,064	17,851	18,749	17,023	*11,166	18,334
chfield	*9,982	*15,825	18,576	21,600	15,272	11,831	12,180	16,771	22,780
ntington Beach	*30,433	*43,855	53,667	72,177	52,232	43,527	47,906	94,125	30,601
ng Beach	*100,273	*165,741	170,675	94,635	103,923	110,064	164,268	188,541	50,851
rrance	*11,279	*13,699	17,634	22,846	*28,370	*36,280	47,846	8,572	523
minguez	*10,121	*9,882	11,659	16,130	21,374	36,517	18,611	432	.....
osecrans	*6,672	*6,756	6,537	9,606	16,752	19,900	1,671	.....	.....
glewood	*17,614	*24,022	29,467	34,963	47,644	50,270	29	.....	.....
wport	40	42	36	34	90	89	.....	.....	.....
al Beach	*21,981	*39,502	33,979	45,000	1,609	.....	.....	.....	.....
strero	1,749	744	294	2	.....	.....	.....	.....	.....
wndale	357	1,076	43	.....	.....	.....	.....	.....	.....
aya Del Rey	12,931	69	.....	.....	.....	.....	.....	.....	.....
Total	*624,931	*800,101	*633,832	*632,196	*614,019	*630,541	*628,588	*722,545	*382,539

*Some production curtailed.

in California during 1930, as compared with 910 in 1929. The completion list for the past year is, with one exception, the smallest since 1921 when 684 new wells were finished. The aggregate initial daily production of new wells, 584,521 bbls. for 1930, was far below a similar figure for 1929 when a total of 1,307,496 bbls. of new production was added. The total of 964 new rigs erected in 1930 is the smallest since 1920 when 925 derricks were constructed. Abandonments set a new high record during the past year, reflecting the usual high mortality rate of wildcat and indicating a much higher rate of depletion in producing wells than heretofore. During 1930 there were 254 drilling wells and 320 producing wells abandoned.

A check of development work done in 1930 shows that Playa Del Rey headed the completed list with 163 new wells, followed by Santa Fe Springs with 148, Long Beach with 142, Midway-Sunset with 68, Ventura Avenue with 36 and Elwood with 31. The result was somewhat different, however, as far as the initial daily production of new wells is concerned. Completions at Santa Fe Springs were good for an aggregate initial daily production of 123,916 bbls. This field was followed by Elwood where 122,312 bbls. of new production was added during 1930. Then came Playa Del Rey with 104,049 bbls., Long Beach with 90,288 bbls. and Ventura Avenue with 51,530 bbls. The Elwood Field of Santa Barbara County showed the highest average initial daily production as the 31 new wells finished in that district during 1930 were good for an average of 3,946 bbls. each. The six new wells completed at Kettleman Hills averaged 3,651 bbls. per day each. During 1930, there were 274 new rigs erected at Playa Del Rey, 173 at Long Beach and 156 in wildcat territory.

LOW QUOTATIONS ON REFINED OIL PRODUCTS

(Continued from Page 91)

an average of 3.58 cents. In North Texas the same grade brought an average price of 3.48 cents.

In Oklahoma and other Mid-Continent refining groups, kerosene prices were fairly uniform over the first four months of the year. The decline started in May after the spring demand was over. Prices failed to rally during the fall months which is usually a strong period in the kerosene market and this weakness continued until the end of the year.

In Pennsylvania, the 43 water white grade averaged 5.01 cents in 1930. In 1929, the average was 6.51 cents and in 1928, 6.35 cents. At Bayonne, N. J., the market was weak throughout the entire year with an average price of 7 cents. The West Coast quotations also slumped, the average price for a 38-40 grade being 4.55 cents. The previous year the average price was 5.69 cents and in 1928, 6.11 cents.

As in the case of gasoline relative high prices were maintained for kerosene over the greater part of the year. This was due to the influence of the Export Petroleum Association, Inc. The price at the Gulf Coast for 41-43 prime white kerosene was 7 cents in January and February. This price was reduced to 6 cents in March and continued at that level until early November. Competitive conditions at that time resulted in a sharp decline the grade ending the year at 4¼ cents.

Fuel Oils

The year 1930 was a period of liquidation in fuel oil stocks for many refiners. Heavy stocks were accumulated during 1929 and 1928 in expectation that conditions would improve and they could be sold at profitable prices. Many refiners met this situation by reducing their crude oil runs to stills and increasing their cracking operations. This is reflected in the fact that while the production of straightrun gasoline was practically the same as in 1929, the production of cracked gasoline increased approximately 20,000,000 bbls. or 15 per cent.

In the Mid-Continent area the fuel oil market was weak throughout 1930 but average quotations were only slightly lower than they were the year before. At the start of the year fuel oil in Oklahoma below 18 gravity, which covers the bulk of the refinery output, was 70 cents. Prices started to decline early in March and by early summer had reached a 45-cent level. This price continued through the summer and fall months and then slumped to 40 cents which was the prevailing price at the close of the year. The same relative price trend prevailed in Kansas and inland Texas. In North Louisiana and Arkansas where there was no excess production of crude oil, fuel oil prices were more stable throughout the year.

California fuel oil prices also declined especially the latter part of 1930. The average price for the year of 15-19 Bunker C fuel at tidewater was 63.46 cents which compares with 67.24 cents in 1929 and 86.92 cents in 1928.

Along the East Coast a price of $1.05 for Bunker C fuel oil was maintained over the first three months of the year. In April the price was advanced to $1.15. It was again reduced to $1.05 in early September and continued at that level until the last of the year. The average of $1.0919 for the year compares with $1.05 for the previous year.

In general the price trends for the distillate and gas oils cuts followed the price trends of the heavier fuel oils in a given area. The furnace oil demand for distillate is believed to have been greater than the previous year but with supplies more than adequate, price averages were no higher than they were in 1929 and in some refining areas were lower.

Lubricants

Led by the Pennsylvania area, prices on paraffin base and mixed base lubricants had a bad year in 1930. This was particularly true in the case of steam refined stocks and bright stocks with smaller reductions in neutral oils. The Pennsylvania market had begun to slump before the end of 1929 after having one of the strongest markets in the history of the field for approximately one year.

The drop in the Pennsylvania lubricants was accompanied by a sensational decline in crude oil prices both developments reflecting an overproduction at the wells and refineries. The average price for one of the best grades of Pennsylvania grade oil as shown in the accompanying table averaged $2.55, the lowest average price in the past 10 years.

Pennsylvania bright stock which brought a high of 57 cents a gallon in 1929 started 1930 at 43 cents and slumped to a low of 19 cents. The average price for this product at Pennsylvania refineries was 30.73 cents in 1930 and 47.45 cents in 1929. However, not considering the abnormal price situation in 1929, the 1930 figure was in line with the general average of previous years.

In Oklahoma, refiners were slower in advancing their quotations on bright stock and steam refined stock in 1929 than were the Pennsylvania refiners and slower in reducing it in 1930. Near the close of 1929, a price of 37 cents was established for the 150-160 grade of bright stock in Oklahoma. This price was maintained despite the slump in the Pennsylvania prices until May. At that time prices started to decline and this trend continued until the end of the year reaching a low of 18 cents for a low cold test grade before the end of the year.

In the paraffin base neutrals and cylinder stocks of all grades the demand centered in the low cold test products. Manufacturing facilities have been changed so that limited quantities of these oils are available with cold tests around zero. Several refiners who were in a position to furnish these products were able to secure the high of the prevailing market for their output.

The decline in the pale and red neutrals manufactured from asphaltic and naphthene base oils was not as great as in the case of paraffin oils. However, the market was not strong at any time during the year and prices were usually reduced when any changes were made.

Petroleum Wax

The petroleum wax market was unsatisfactory in 1928 and 1929 and continued weak in 1930. Both the domestic and export demand decreased in 1930 and although refiners produced less in 1930 than in 1929 this reduction was not as great as the slump in demand and stocks continued to accumulate.

At New York, the average for 120-122 a.m.p. wax was 3.26 cents in 1930, 3.53 cents in 1929 and 3.39 cents in 1928. The 124-126 grade in Oklahoma brought an average price of 2.16 cents in 1930 which compares with an average of 3.21 cents in 1929.

PRODUCTION IN 1930 TOTALED 901,740,870 BBLS.

(Continued from Page 90)

465,000 bbls. per day; February, maximum 506,440 bbls. per day, minimum 469,000 bbls. per day; March, maximum 500,010 bbls. per day, minimum 470,000 bbls. per day. The maximum and minimum demand was dependent on the ability of producers formerly selling oil to the Prairie Oil & Gas Co. finding new buyers for their crude, the Prairie company having withdrawn as a purchaser of crude oil at the close of 1930.

Proration in Texas

Proration in Texas dates back to the days when the Yates Pool and the Hendricks Pool, in West Texas, threatened to flood the market. Yates was without adequate pipe line outlets and it was forced by reason of this, to produce very temporately. On the other hand Winkler was well provided with pipe lines but the buying companies did not want all the oil the Hendricks Pool could produce, and a producers' agreement was reached on prorating runs from wells. The curtailment spread to other fields and last year the Mid-Continent Oil and Gas Association stepped in and assisted operators in organizing a more orderly system of prorating all flush fields, while at the same time Gulf Coastal operators, seeing the futility of permitting their wells to flow wide open, assisted materially in the movement in a voluntary way. While Texas produced more oil than the demand warranted, the output of crude toward the close of the year was being brought down to a point approximating market demand.

The dangerous Hobbs Pool in New Mexico was also taken care of by a producers' agreement backed by New Mexico's state government and that pool with its rated potential of over 1,000,000 bbls. per day was kept down to around 30,000 bbls. per day.

In Kansas producers made constant efforts to conclude a workable proration plan, but there was no way of enforcing it by law and while it was successful in part there was not the success attained in those states where governmental agencies assisted.

In the Pennsylvania Grade fields of New York, Pennsylvania, West Virginia and southeastern Ohio it was found necessary to institute and keep alive a proration movement in the last half of the year.

DICTIONARY OF OIL OFFERED

The "Petroleum Dictionary," by Hollis P. Porter, widely known engineer of Tulsa, represents the most serious effort yet made to provide a glossary of terms used in the oil industry. The need for such a work, long recognized, has increased in recent years as the result of the introduction into the language of petroleum of many new words and expressions descriptive of new discoveries, new processes and new appliances. Existing glossaries were either incomplete or covered some one division only of the industry. Mr. Porter's dictionary, with its 234 pages presenting about 3,000 terms, is believed to be, with perhaps one exception, the only publication setting out to give all the terms peculiar to all the branches of the oil business. It is safe to say that it will become one of the most widely used reference books in the bibiography of petroleum. The book bears evidence of thoroughness and of a large amount of labor.

OIL LEGISLATION IN COLOMBIA

The Colombian senate has approved 11 additional articles of the new oil bill, bringing to a total of 28 the number which have been amended. Exploration period is extended to five years and is extendable an additional three years on unreserved national lands in the Putumayo and Amazonas areas, east of the axis of the eastern Andean cordillera. Surface taxes for the exploitation period are dropped and the 1929 formula was adopted prohibiting concessionaries from restricting production below 25 per cent of the maximum producing capacity of the well without government consent which is limited to one year. Royalties payable on a basis of 25 per cent of production are restricted without permission

PLANTS INDICATE FORMATIONS

An article by Robert H. Cuyler in the January issue of the Bulletin of the American Association of Petroleum Geologists states that although there are exceptions, plants are commonly found to be as indicative of the formation on which they grow as are the fossils in the rocks. The most important reason for using vegetation is that contacts between formations may be mapped at a distance of several miles, because a decided change in the vegetation is noticeable.

NO NEW MAJOR POOLS IN WEST TEXAS AREA

(Continued from Page 127)

County has witnessed the drilling of several wells during the year, some of them proving dry and some small producers but the pool seems to be proving the theory that it is producing from sand lenses, and consequently is not stable.

During the last few months West Texas crude oil storage has been drawn upon heavily. A total of 7,130,000 bbls. was taken from storage during the year which would average better than 19,500 bbls per day.

Production, leasing, royalty buying and all activities slumped greatly in 1930, and despite rigid proration in the district which is one of the tightest and most efficiently prorated districts in the United States, the price structure was not maintained and in October posted prices were cut from 10 cents to 27 cents per barrel. A 10-cent increase was posted in April of 1930.

WEST TEXAS

Summary of Completed Wells in 1930

	Comp.	Prod.	Dry Ga
Andrews	7	432	1
Borden	2	0	2
Brewster	2	0	2
Coke	5	0	5
Concho	2	0	2
Crane	48	14,581	3
Crockett	13	1,044	6
Culberson	5	0	5
Ector	85	49,711	7
El Paso	1	0	1
Fisher	11	1,744	7
Gaines	2	0	2
Garza	3	0	3
Glasscock	41	31,933	6
Howard	73	13,430	8
Hudspeth	3	0	3
Irion	18	470	12
Jones	12	1,013	8
Kent	2	0	2
Kimble	3	0	3
Loving	19	5,895	3
Lynn	1	0	1
Menard	3	5	2
Midland	1	0	1
Mitchell	10	559	6
Nolan	3	0	3
Pecos	214	177,772	70
Presidio	2	0	2
Reeves	6	5	5
Reagan	13	6,494	3
Runnels	4	186	3
Scurry	3	0	3
Schleicher	2	0	2
Sterling	2	0	2
Sutton	3	0	3
Taylor	9	310	4
Tom Green	6	0	6
Terry	1	0	1
Upton	24	5,192	4
Val Verde	1	0	1
Ward	48	6,016	15
Winkler	20	40,877	3
Total 1930	733	357,669	233

Completions by Months	Comp.	Prod.	Dry Ga
January	67	40,453	20
February	72	37,119	20
March	76	16,600	31
April	63	18,035	22
May	89	31,319	25
June	60	15,938	14
July	58	56,900	13
August	76	55,675	27
September	56	41,720	21
October	45	27,104	15
November	38	12,569	12
December	33	4,237	12
Total 1930	733	357,669	233
Total 1929	1,116	1,886,226	389
Difference	383	1,528,557	156

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Hobbs Pool of Unusual Importance

Major Development in Lea County, New Mexico, With Important Discoveries in Wyoming From Deeper Drilling in 1930

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

The Rocky Mountain area, as a whole, showed a larger number of wells completed in 1930 than in 1929, several major discoveries and comparatively a successful year. The number of wildcats drilled, however, showed a decrease.

New Mexico had the largest number of completions and its initial production jumped from 13,065 bbls. in 1929 to 1,099,268 bbls. in 1930. This increase resulted from the development of the Hobbs Pool in Lea County from five producers with a capacity of 2,500 bbls. per day at the beginning of the year to 134 wells with a rated potential of 1,081,578 bbls. per day at the end of the year. The productive area was fairly well outlined during the year and the pool was put under proration and held down to an outlet of 35,000 bbls. or less, daily. A new pool was opened up in the Eunice area in Lea County with several wells producing around 1,000 bbls.; the Lea Pool, in the same county, was developed on the southern end and the limits defined; the Jal area was drilled only to a limited extent; and wildcatting in unproven territory was held down to a minimum.

Colorado had a much smaller number of completions than in 1929, but wildcatting resulted in the opening of a very promising oil district in the plains region in the eastern part of the state and a new gas field in the northwestern area. Seven structural tests resulted in failures.

The features of development in Wyoming in 1930 were the testing of deeper horizons in the older producing fields and the opening of new oil pools on the Midway Dome in Natrona County on the Pitchfork Dome in Park County. New producing horizons as a result of deeper drilling were discovered in Salt Creek, Mahoney Dome, Lost Soldier, Dallas-Derby, Mule Creek, Lance Creek, Byron and Garland. Six structural tests proved to be failures.

Utah had three structural tests abandoned and one dome was developed for carbon dioxide gas to be used in manufacturing dry ice.

Idaho had two gas discoveries and one failure in a structural test by a major company.

NEW MEXICO

Hobbs Pool—Lea County

The Hobbs Pool in Lea County, New Mexico, in which the Midwest Refining Co. brought in the discovery well in the fall of 1928 in its No. 1 State, NE cor. Section 9-19-38, leaped into first place in 1930 among the oil fields of the Rocky Mountain area. At the beginning of the year the pool had only five producing wells and one dry hole. These were in what afterwards proved to be the southeastern part of the field and comparatively were small wells, averaging around 500 bbls. each. At the end of the year there were 134 wells with a potential capacity of 1,081,578 bbls. a day. The peak in drilling operations was reached during the summer when there were 72 wells under way at one time. Drilling was confined mostly to one well to each 40 acres and only necessary offsets were put down. The number of drilling wells had been reduced to 10 at the end of the year, this number including two wildcats several miles out from production. The principal development in the pool occurred during the last half of the year, only 16 wells with a capacity of 60,000 bbls. a day having been completed by the end of June. The structure is credited with being the only producing oil field

WYOMING

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
BIG MUDDY—													
Daily average	1,802	2,083	1,982	2,009	2,021	2,029	1,980	1,972	1,826	1,874	1,864	2,022	
Month	55,862	58,324	61,442	60,270	62,651	60,870	61,380	61,132	54,780	58,094	55,920	62,682	713,407
LANDER—													
Daily average	407	401	558	520	679	540	513	411	589	821	666	379	
Month	12,617	11,228	17,298	15,600	21,049	16,200	15,903	12,741	17,670	25,451	19,880	11,749	197,486
DUTTON CREEK—													
Daily average	.....	.....	6	54	151	58	52	103	151	117	7	84	
Month	.....	.....	186	1,620	4,681	1,740	1,612	3,193	4,530	3,627	210	2,604	24,003
ELK BASIN—													
Daily average	671	744	682	767	813	844	1,116	659	782	736	680	740	
Month	20,801	20,832	21,142	23,010	25,203	25,320	34,596	20,429	23,460	22,816	20,400	22,940	280,949
FERRIS—													
Daily average	42	19	44	20	62	27	46	42	14	37	42	10	
Month	1,302	532	1,364	600	1,923	810	1,426	1,302	420	1,147	1,260	310	12,396
FRANNIE—													
Daily average	290	54	406	188	.....	70	203	119	89	209	859	812	
Month	8,990	1,512	12,586	5,640	.....	2,100	6,293	3,689	2,670	6,479	25,770	25,172	100,901
GRASS CREEK—													
Daily average	1,788	1,943	1,949	2,069	2,016	2,159	2,112	1,983	1,962	1,953	1,801	1,853	
Month	55,428	54,404	60,419	62,070	62,496	64,770	65,472	61,473	58,860	60,543	54,030	63,643	722,010
HAMILTON—													
Daily average	637	770	663	776	889	788	891	853	917	847	6	.....	
Month	19,747	21,560	20,553	23,280	27,559	23,640	27,621	26,443	27,510	26,257	180	.....	244,350
LA BARGE—													
Daily average	2,242	2,227	2,270	2,140	2,024	2,091	1,952	1,974	1,877	1,801	1,839	1,726	
Month	69,502	62,356	70,370	64,230	62,744	62,730	60,512	61,194	56,310	55,831	55,170	53,506	734,455
LANCE CREEK—													
Daily average	157	167	77	179	138	131	138	133	135	181	234	341	
Month	4,367	4,676	2,387	5,370	4,278	3,930	4,278	4,123	4,050	5,611	7,020	10,571	61,151
LOST SOLDIER—													
Daily average	3,082	3,212	3,152	3,031	3,071	1,242	962	3,315	4,967	4,664	4,087	4,470	
Month	95,542	89,936	97,712	90,930	95,201	37,260	29,822	102,765	149,010	144,584	122,610	138,570	1,193,943
NOTCHES—													
Daily average	.....	.....	.....	.....	.....	.....	.....	25	.....	.....	.....	.....	
Month	.....	.....	.....	.....	.....	.....	.....	775	.....	.....	.....	.....	775
MULE CREEK—													
Daily average	.....	.....	.....	.....	742	.....	.....	.....	.....	.....	.....	.....	
Month	.....	.....	.....	.....	23,002	.....	.....	.....	.....	.....	.....	.....	23,002
OREGON BASIN—													
Daily average	4,114	4,037	5,193	4,701	4,226	5,151	3,448	3,457	2,544	2,599	2,885	3,316	
Month	127,534	113,036	160,983	141,030	131,006	154,530	106,888	76,167	76,320	80,569	86,550	102,796	1,357,409
OSAGE—													
Daily average	656	991	987	948	941	883	1,226	1,169	1,463	1,376	1,771	1,014	
Month	20,336	27,748	30,597	28,440	29,171	26,490	38,006	36,239	43,890	42,656	53,130	31,434	408,137
PILOT BUTTE—													
Daily average	.....	.....	.....	.....	.....	.....	.....	373	26	.....	.....	.....	
Month	.....	.....	.....	.....	.....	.....	.....	11,563	780	.....	.....	.....	12,343
POISON SPIDER—													
Daily average	777	387	375	523	1,146	377	168	1,394	1,318	905	256	389	
Month	24,087	10,780	11,625	15,690	35,526	11,310	5,208	43,214	39,540	28,055	7,680	12,059	244,774
ROCK CREEK—													
Daily average	2,150	2,190	2,159	2,136	2,095	2,146	2,154	2,072	2,157	2,035	2,031	2,133	
Month	66,650	61,320	66,929	64,080	64,945	64,380	66,774	64,232	64,710	63,085	60,930	66,123	774,159
SALT CREEK—													
Daily average	27,244	30,993	30,537	30,786	29,362	28,262	28,998	27,398	28,926	28,362	26,912	28,215	
Month	844,564	867,804	946,647	923,580	910,222	847,860	898,938	849,338	867,780	879,222	807,360	874,665	10,517,980
SIMPSON RIDGE—													
Daily average	.....	.....	48	51	68	53	58	47	49	46	90	51	
Month	.....	.....	1,488	1,530	2,108	1,590	1,798	1,457	1,470	1,426	2,700	1,581	17,148
TEAPOT DOME—													
Daily average	22	38	36	32	34	33	30	36	24	25	24	20	
Month	682	1,064	1,116	960	1,054	990	930	1,116	720	775	720	620	10,747
ALKALI BUTTE—													
Daily average	.....	.....	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	.....	.....	1,736	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,736
REX LAKE—													
Daily average	77	74	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Month	2,387	2,072	1,085	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,544
BYRON—													
Daily average	.....	.....	.....	.....	15	11	10	122	505	267	9	10	
Month	.....	.....	.....	.....	465	330	310	3,782	15,150	8,277	270	310	28,894
WARM SPRINGS—													
Daily average	.....	.....	.....	.....	.....	.....	138	99	102	64	88	97	
Month	.....	.....	.....	.....	.....	.....	4,278	3,069	3,060	1,984	2,640	3,007	18,038
LOVELL—													
Daily average	.....	.....	.....	.....	.....	.....	20	.....	.....	.....	.....	11	
Month	.....	.....	.....	.....	.....	.....	620	.....	.....	.....	.....	341	961
SOUTH CASPER CREEK—													
Daily average	.....	.....	.....	.....	.....	.....	1,023	.....	.....	.....	.....	.....	
Month	.....	.....	.....	.....	.....	.....	31,713	.....	.....	.....	.....	.....	31,713
Daily average	46,158	50,328	51,215	50,931	50,493	46,895	47,238	46,756	50,423	48,919	46,151	47,893	48,683
Total 1930	1,430,898	1,409,184	1,587,665	1,527,930	1,565,283	1,406,850	1,464,378	1,449,436	1,512,690	1,516,489	1,384,530	1,484,684	17,740,817
Total 1929	1,512,087	1,442,336	1,599,104	1,490,430	1,581,806	1,520,160	1,674,434	1,764,396	1,652,760	1,643,775	1,586,700	1,603,630	19,071,828
Total 1928	1,756,505	1,598,602	1,714,889	1,748,520	1,908,918	1,834,410	1,852,684	1,909,476	1,791,900	1,915,397	1,762,980	1,609,179	21,403,460
Total 1927	1,870,727	1,678,180	1,840,439	1,838,070	1,896,301	1,852,920	1,898,626	1,688,725	1,577,700	1,550,620	1,563,210	1,728,157	20,983,679

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outside of the Gulf Coast salt domes discovered and worked out entirely by geophysical methods, this work having been in charge of the geological department of the Midwest Refining Co.

The importance of the pool was not fully disclosed until the Humble Oil & Refining Co.'s No. 1 Bowers, C NE SE, Section 30-18-38, 3 miles to the northwest of the discovery, blew in early in January at 4,106 feet and gauged 9,720 bbls. the first 24 hours, open flow, after being completed. A number of major companies owned leases and permits in the pool and it was apparent Hobbs was of sufficient size and importance to disturb market conditions unless steps were taken at once to prevent a flood of flush production. Most of the land is government or state owned. Attempts were made to reach an agreement to restrict drilling operations and hold the pool in reserve, but the State of New Mexico, which had no other major oil pool, was desirous of having the field developed so that it might benefit from oil revenues proportionately with other states. Drilling then went ahead on a considerable scale and the operators began planning to take care of the oil. The Humble Pipe Line Co. built an 8-inch line north from Jal, where it had a connection with its system in West Texas; the Atlantic Pipe Line Co. constructed an 8-inch line from Midland, Tex., entering Lea County from the east; and the Shell Pipe Line Co. built a line from a connection with the Texas Pipe Line Co.'s system to Hobbs. The Texas & Pacific Railroad constructed a branch rail line from Monahans, Tex., through eastern Lea County, by way of Hobbs to Lovington. Several townsites were promoted, airplane service to oil centers was inaugurated and the new operation was rushing forward towards a major development.

The dangers of overproduction from a new field finally were avoided by the operators and the State of New Mexico reaching an agreement to prorate the production, and this plan went into effect on July 10 under the direction of an executive committee with C. G. Staley in charge as umpire. The maximum outlet of the field, based on pipe line capacity and market requirements, was placed at 35,000 bbls. daily. The probable productive area was divided into units of 40 acres each and methods were worked out for determining the potentials of the wells. The allowable production was based 25 per cent on acreage and 75 per cent on unit potential. It was agreed that no large storage should be erected in the field and that only one well should be drilled upon each unit. This agreement was made effective for a period of six months and was renewed on January 5 for another six months.

The structure runs in a northwest-southeast direction. At the end of 1930, the proven area as shown by productive wells was extended a distance of 6½ miles from The Texas Company's No. 1 Selman, NW cor., SE Section 15-19-38, the most southeasterly of the producers, to the Empire Gas & Fuel Co.'s No. 3 Hardin, NE NW, Section 19-18-38. The maximum width is about two miles. The limits of the pool have practically been determined on all except the western and northwestern sides. The wells reach the top of the brown lime at around 2,800 feet and beneath this is a gas sand that in some parts of the field made upwards of 50,000,000 feet a day. At around 3,200 feet there is a pay which produces high gravity "sweet" oil and the dolomite is found at 4,000 feet. Rotaries are used in drilling. The first string of casing run usually is the 12½-inch which is cemented below 200 feet in the red beds. The 9⅝-inch is cemented just above the top of the brown lime and the 7-inch on top of the pay. Gauging to establish potentials for proration is through the 3-inch tubing, which is run 25 or more feet below the top of the pay, and through both tubing and casing. The wells vary in potential production according to porosity of the lime, some of the biggest wells being on the flanks. The area of 15,000 to 20,000-bbl. wells mostly is on the north central and north

NEW MEXICO

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
ARTESIA—													
Daily average	679	773	747	759	716	776	693	688	587	763	653	596	
Month	21,049	21,644	23,157	22,770	22,196	23,280	21,483	21,328	16,710	23,653	19,590	18,476	255,316
CAP ROCK (Maljamar)—													
Daily average	968	923	969	906	890	929	850	658	247	445	394	319	
Month	30,008	25,844	30,039	27,180	27,590	27,870	26,350	20,398	7,410	13,795	11,820	9,889	258,193
LEA CITY—													
Daily average	4,927	3,695	4,750	5,768	6,018	5,861	5,850	5,189	5,258	4,271	3,146	3,812	
Month	152,727	103,460	147,250	173,040	186,558	175,830	181,350	160,859	157,740	132,401	94,380	118,172	1,784,77
GETTY—													
Daily average	.....	21	.....	.....	.....	.....	109	122	104	129	188	175	
Month	.....	588	.....	.....	.....	.....	3,379	3,782	3,120	3,999	5,640	5,425	25,93
TEXAS PACIFIC AREA—													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	256	
Month	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,936	7,93
HOBBS—													
Daily average	447	34	89	553	7,313	11,629	32,135	31,965	34,859	33,082	31,105	31,283	
Month	13,857	952	2,759	16,590	226,734	348,870	996,185	990,915	1,045,770	1,025,542	933,150	969,773	6,571,99
JAL—													
Daily average	1,249	1,416	1,448	1,397	1,408	1,340	1,475	1,469	1,255	1,342	1,312	1,416	
Month	38,719	39,648	44,888	41,910	43,648	40,200	45,725	45,539	40,650	41,602	39,360	43,865	505,75
SAN SIMON—													
Daily average	528	265	1,026	1,555	426	452	361	339	659	1,529	1,970	2,049	
Month	16,368	7,420	31,806	46,650	13,206	13,560	11,191	10,509	19,770	47,399	59,100	63,519	340,49
RATTLESNAKE—													
Daily average	856	892	1,290	998	755	1,346	1,852	1,327	1,270	1,257	1,119	1,067	
Month	26,536	24,976	39,990	29,940	23,405	40,380	57,412	41,137	38,100	38,967	33,570	33,077	427,60
TABLE MESA—													
Daily average	111	85	112	107	106	104	330	93	90	85	82	89	
Month	3,441	2,380	3,472	3,210	3,286	3,120	10,230	2,883	2,700	2,635	2,460	2,759	42,57
HOGBACK—													
Daily average	414	415	457	453	386	431	476	442	418	436	448	444	
Month	12,834	11,620	14,167	13,590	11,966	12,930	14,756	13,702	12,540	13,516	13,440	13,764	158,83
Daily average	10,179	8,519	10,888	12,496	18,019	22,868	44,131	42,292	44,817	43,339	40,417	41,505	28,41
Total 1930	315,549	238,532	337,528	374,880	558,589	686,040	1,368,061	1,311,052	1,344,510	1,343,509	1,212,510	1,286,655	10,377,41
Total 1929	87,668	83,384	89,621	98,640	96,751	88,762	125,116	145,421	177,840	245,675	279,090	285,293	1,802,26
Total 1928	74,865	59,981	69,347	68,160	73,473	58,860	69,471	89,156	94,830	97,309	98,100	120,342	973,81
Total 1927	136,679	138,460	148,738	142,140	112,530	102,120	89,200	76,911	73,500	58,652	71,910	63,364	1,214,25

MONTANA

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
CAT CREEK—													
Daily average	1,118	1,236	1,157	1,166	1,166	1,153	1,161	1,114	1,116	1,049	1,107	1,141	
Month	34,658	34,608	35,867	34,980	36,146	34,590	35,991	34,534	33,480	32,519	33,210	35,371	415,95
KEVIN SUNBURST—													
Daily average	4,952	5,277	5,449	6,389	6,142	5,945	5,905	5,851	4,949	4,366	4,512	4,074	
Month	153,512	147,756	168,919	191,670	190,402	178,350	183,055	181,381	148,470	135,346	135,360	126,294	1,940,51
LAKE BASIN—													
Daily average	75	61	62	60	62	69	58	75	59	.....	60	52	
Month	2,325	1,708	1,922	1,800	1,922	2,070	1,798	2,325	1,770	.....	1,800	1,612	21,95
PONDERA—													
Daily average	2,031	1,762	1,963	2,332	2,442	2,373	2,311	2,076	1,753	1,711	1,730	1,495	
Month	62,961	49,336	60,853	69,960	75,702	71,190	71,641	64,356	52,590	53,041	51,900	41,345	729,87
BORDER—													
Daily average	.....	.....	.....	.....	.....	105	378	459	544	342	433	351	
Month	.....	.....	.....	.....	.....	3,150	11,718	14,229	16,320	10,602	12,990	10,881	79,89
BANNATYNE—													
Daily average	.....	.....	.....	.....	.....	.....	.....	140	65	70	69	68	
Month	.....	.....	.....	.....	.....	.....	.....	4,340	1,950	2,170	2,070	2,108	12,63
DRY CREEK—													
Daily average	.....	.....	.....	.....	.....	.....	.....	.....	60	22	24	22	
Month	.....	.....	.....	.....	.....	.....	.....	.....	1,800	682	720	682	3,88
Daily average	8,176	8,336	8,631	9,947	9,812	9,642	9,813	9,715	8,546	7,560	7,935	7,203	8,77
Total 1930	253,456	233,408	267,561	298,410	304,172	289,350	304,203	301,165	256,380	234,360	239,050	223,293	3,203,99
Total 1929	261,299	257,656	293,973	298,830	350,238	347,610	347,448	356,190	332,940	335,544	320,490	324,849	3,827,06
Total 1928	363,370	339,679	358,112	350,520	338,272	313,260	317,626	328,600	336,870	296,980	307,440	347,820	3,998,54
Total 1927	426,498	399,868	452,600	417,000	434,155	462,330	456,847	497,364	413,280	428,947	379,560	403,434	5,171,88

COLORADO

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
CRAIG—													
Daily average	1,014	1,152	993	951	902	1,151	1,118	1,006	962	1,102	1,013	943	
Month	31,434	32,256	30,783	28,530	27,962	34,530	34,658	31,186	28,860	34,162	30,390	29,233	373,98
FORT COLLINS—													
Daily average	1,696	1,671	1,504	1,414	1,379	1,354	1,231	1,212	1,183	1,162	1,164	1,161	
Month	52,576	46,788	46,624	42,420	42,749	40,620	38,161	37,572	35,490	36,022	34,920	35,991	489,93
FLORENCE—													
Daily average	442	864	691	582	616	555	529	498	513	467	476	425	
Month	13,702	24,192	21,421	17,460	19,096	16,650	16,399	15,438	15,390	14,477	14,280	13,175	201,68
ILES—													
Daily average	1,059	1,007	982	952	1,011	1,028	1,146	1,093	1,046	1,040	994	1,041	
Month	32,829	28,196	30,442	28,560	31,341	30,840	35,526	33,883	31,380	32,240	29,820	32,271	377,32
TOW CREEK—													
Daily average	546	434	409	477	407	399	393	365	362	386	348	361	
Month	16,926	12,152	12,679	14,310	12,617	11,970	12,183	11,315	10,860	11,966	10,440	11,191	148,69
MISCELLANEOUS—													
Daily average	120	117	75	77	110	78	75	74	115	75	72	70	
Month	3,720	3,276	2,325	2,310	3,410	2,340	2,325	2,294	3,450	2,325	2,160	2,170	32,10
Daily average	4,877	5,245	4,654	4,453	4,425	4,565	4,492	4,248	4,181	4,232	4,067	4,001	4,44
Total 1930	151,187	146,860	144,274	133,590	137,175	136,950	139,252	131,688	125,420	131,192	122,010	124,031	1,623,63
Total 1929	215,016	182,280	213,125	197,130	223,727	224,220	213,838	212,009	183,480	167,958	163,830	164,984	2,361,59
Total 1928	234,635	232,625	259,563	203,610	204,383	218,940	252,805	234,608	208,830	262,136	220,350	211,699	2,744,18
Total 1927	215,016	223,356	242,947	274,620	239,165	217,200	232,926	226,021	204,150	220,596	220,050	206,623	2,722,67

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SAFETY SECTION
MID-CONTINENT OIL & GAS ASSOCIATION

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eastern sides, though almost as large wells have been completed in Section 5-19-38, on the southwestern side. The well with the largest potential on January 1, 1931, was the Continental Oil Co.'s No. 3-A State, Section 29-18-38, which was rated at 25,531 bbls.

The potential of the field on January 1, 1931, based on the average unit potential, was 1,081,578 bbls. from 134 wells on 120 units. The well potential is somewhat larger as where there is more than one well on a unit, the well potential is averaged and the average figure used for the unit potential. The operators, number of wells and units and rated potentials on January 1, were as follows:

	No. Wells	No. Units	Rated Pot. Bbls.
Amerada	10	10	127,526
Atlantic Oil Prod.	2	2	8,456
Continental	7	7	88,321
Empire Gas & Fuel	6	6	46,947
Getty Oil	3	3	44,906
Gypsy	7	7	90,174
Humble	12	11	126,985
Landreth	2	2	13,997
Mid-Continent Pet.	1	1	2,592
Midwest Refining	21	19	90,406
Ohio Oil	10	8	73,059
Prairie Oil & Gas	4	3	12,179
Shell Petroleum	19	17	145,638
Skelly Oil	2	2	13,478
Sun Oil	4	4	46,073
California Co.	5	3	25,180
Texas Company	7	7	48,799
Tidal Oil	7	5	58,209
Texas & Pacific	2	2	14,515
Vacuum Oil	1	1	2,138
Walker Oil	2	0	500

Eunice Area—Lea County

The Eunice area, which comprises a little more than four townships to the south of the Hobbs area, came in for considerable attention during 1930 and at the end of the year it was the scene of more drilling than any other part of Lea County with the exception of the Hobbs Pool. In January, 1930, the Continental Oil Co. completed a producer in its No. 1 A. E. Meyers, NE SW SW, Section 17-21-36, at a total depth of 4,001 feet. It gauged 1,300 bbls. of 34 gravity oil the first 24 hours. The top of the pay was at 3,995 feet. Above this horizon it had a flow of 77,000,000 feet of gas, which was shut off. This well is one and one-fourth miles to the north and a little east of the same company's No. 1 Lockhart, NE NW NW, Section 31-21-36, which was completed in 1929 as a 278-bbl. well after plugging off bottom water. The Tidal Oil Co. drilled a well half a mile to the northeast of the Continental's No. 1 A. E. Meyers in its No. 1 Coleman, SW cor. NE. Section 17-21-36, which found the pay at 3,853-3,968 feet and was drilled to 4,147 feet and plugged back. It made 950 bbls. of oil and 4,000,000 feet of gas the first 24 hours. The Getty Oil Co. drilled one-fourth of a mile to the southwest of the Continental well in its No. 1 State, NE cor., Section 19-21-36, to a total depth of 4,000 feet. The pay at 3,940-60 feet was shot with 80 quarts and the well made 1,142 bbls. the first 24 hours. Two offsets to the Tidal well were being drilled at the end of the year by the Shell and Continental companies and the Atlantic Oil Producing Co. was drilling one-fourth of a mile to the northwest of these producers. Six miles to the south and east of this group of producers, the Ohio Oil Co. drilled its No. 1 State-McDonald, SW NW SW, Section 15-22-36, to sulphur water at 3,904 feet and plugged it back to a gas sand at 3,878 feet. It gauged 24,000,000 cubic feet of gas with sprays of oil. In this same district, to the south of the Eunice Pool and northwest of the Ohio company's well, the Empire Gas & Fuel Co. completed its No. 1 Closson, NE NE SE. Section 6-22-36, for 145 bbls. a day at 3,841 feet after plugging back from 4,237 feet where it had sulphur water. The area of the Eunice Pool and its relationship to the other wells have not yet been determined.

Cooper Area—Lea County

The Cooper area, comprising four townships south of the Eunice area, in which some large gas well had been completed in widely scattered territory in previous years, had five wells drilled to completion during 1930 which proved up what is known as the Texas & Pacific Pool. The Texas Pacific Coal & Oil Co.'s No. 2 State, NW cor. SW, Section 21-23-36, was drilled to 3,819 feet and plugged back to 3,788 feet to produce a pay topped at 3,709 feet. It made 211 bbls. of oil and 165 bbls. of water initial.

Lea Pool—Lea County

The Lea Pool was discovered early in 1929 by The Texas Company in its No. 1 Lynch, NW cor. SE, Section 34-20-34, this well making 1,000 bbls. initial at a total depth of 3,731 feet. During the first half of 1930 there were 9 wells drilled in the southeastern part of the field and the limits of the pool were defined on the south, east and west. The area to the north and northwest is government land held by The Texas Company and as a result of restrictions on drilling, no development took place in that direction and no wells were put down during the last half of the year in the pool. At the end of the year the pool was making 4,000 bbls daily. The productive area probably will be about 1½ miles in length and rather narrow.

Jal Area—Lea County

There was but little activity in the Jal area in the southeastern corner of Lea County during 1930 and the few wells drilled were completed during the first half of the year.

Miscellaneous—Lea County

Wildcatting in Lea County outside the proven pools was conducted on a smaller scale than in the preceding year. The Penn Oil Co. drilled to the west of the Hobbs Pool in its No. 1 State, NE, Section 21-19-36, and abandoned the hole at 5,775 feet. It had 1,000,000 feet of gas at 4,310 feet which soon was exhausted. Fisher & Lowrie's No. 1 State, NE cor. NW, Section 11-18-36, also to the west of the Hobbs Pool and to the north and east of the Penn well, was drilled to 5,506 feet and was plugged back to 5,171 feet where it swabbed 50 bbls. of oil the first 24 hours from the pay at 5,142-54 feet. Buell & Hagen abandoned a test in the Tatum district at 4,797 feet in its No. 1 State, C NE, Section 33-11-35, and A. D. Morton's No. 1 State, C NW, Section 32-11-38, in the same general area, was abandoned at 5,267 feet. Hill & Abel's No. 1 Maechtel, SW cor., Section 5-26-33, in southwestern Lea County, went to 5,006 feet and still was in salt when it quit. The Barnsdall Oil Corp.'s No. 1 Bronson, SE cor., Section 28-16-38, in the Lovington district north of the Hobbs Pool, was abandoned at 5,160 feet. The Empire Gas & Fuel Co. failed to develop anything new in the Empire area and abandoned its No. 3-B State, SW NE SE, Section 5-21-35, at 4,695 feet. It had a hole full of sulphur water at 3,938 feet.

Eddy County

Drilling in Eddy County was confined to a few wells in the Maljamar and Artesia districts and a limited number of scattered wildcats. No new pools were discovered.

Wildcat areas in the remainder of the state developed nothing of outstanding importance.

COLORADO

Drilling operations and the production of crude oil in Colorado showed a material decrease in 1930 as compared with 1929 and previous years.

Discoveries made in wildcat wells were limited in number in 1930, but two of these were of considerable importance. These were the discovery of oil on the Greasewood Dome in Weld County and the opening of a new gas field on the Bell Rock structure in Moffat County. The Bartram Dome, in Moffat County, was proven for gas in 1929, but the discovery well was not completed until 1930 and a second well drilled during the year added information as to its importance. Minor discoveries were made in Montezuma and Archuleta County. Seven structural tests failed to open up any new pools.

The Greasewood discovery was made in a rank wildcat drilled by the Platte Valley Petroleum Co. in its No. 1 Patterson, NE SE NW, Section 24-6n-61, in Weld County. It was spudded on May 6, 1926, and went ahead at uncertain intervals. On October 10, 1930, the drill encountered oil at 6,641 feet in shale supposed to be just above the Muddy, the first sand in the Dakota series. The elevation of this well is 4,645 feet. It came in flowing by heads, making 180 bbls. a day of 42 gravity oil, green in color and of paraffin base. It headed up 5 or 6 times a day and flowed 15 to 20 minutes at each head. Two months later it was deepened 2½ feet and gauged 360 bbls. in 24 hours and then deepened another 2 feet and made 565 bbls. the first day. It then dropped to around 400 bbls. and at the end of the year had not been drilled into the sand or completed. The oil is being trucked to Orchard where it is loaded in tank cars and shipped by rail to the Continental Oil Co.'s new refinery at Denver.

This discovery is located about 50 miles east and a little south of the Fort Collins-Wellington Pools in Larimer County and is out in the plains region 60 miles from the front mountain range. So far there have been no other wells spotted as most of the acreage taken is being acquired under 10-year commercial leases without drilling clauses. However, it is certain that an extensive drilling campaign is in sight and probably will begin early in the year. The structures in that area generally are considered to be more of the type of Mid-Continent structures with gradual dips rather than the steep domes typical of the Rocky Mountain fields.

The gas discovery on the Bell Rock Dome in Moffat County was made by the Midwest Refining Co. in its No. 24 Hannewalt, NE SE SE, Section 4-6n-92, located 8 miles southwest of Craig and 10 miles to the northwest of the Moffat Dome. The objective in this well was the Morapas sandstone which forms the escarpment around the Moffat and Iles Domes and which the geology indicated would be found at around 4,000 feet. The Dakota, the first producing horizon on the Moffat Dome, is logged below 6,500 feet. A 25-foot sand in the lower Mesa Verde was topped at 2,843 feet and gauged 32,000,000 feet of gas with a pressure of 1,050 pounds. The gas was mudded off with the intentions of continuing on down to the original objective in hopes of encountering oil. A little more gas was picked up and at 2,861 feet there was a show of light green oil, but at 3,040 feet it ran into several bad fishing jobs and it was completed as a gas well at that depth. It gauged 35,000,000 feet with a pressure of 1,020 pounds. It is probable that another test to the Morapas will be drilled next spring.

The Bartram Dome gas discovery was made in 1929 by the Texas Production Co. in its No. 1 Berlin, SW cor. NE. Section 19-12n-100, 3 miles to the west of the Hiawatha Dome near the Wyoming line, but was not completed until this year. It was drilled in the Tertiary and at 1,575 feet it gauged 36,700,000 feet in 24 hours with a pressure of 610 pounds. This flow was killed and the well drilled 2,594 feet where it found water after going through several other gas sands. It was plugged back and the gas in a sand at 2,002-55 feet was saved. This sand gauged 23,000,000 feet a day when originally drilled. However, after being completed it made 8,000,000 feet. The gas is being sold to the Mountain Fuel Supply Co. for the natural gas line into Utah. The Mountain Fuel Supply Co. then drilled its No. 1 Lasher, NW NE NE, Section 25-12-101, a mile to the southwest of No. 1 Berlin and found similar conditions of gas sands with considerable water in several horizons. It was drilled to 2,755 feet and plugged back to a sand at 2,125-50 feet and completed as a 5,000,000-foot well.

A small discovery was made in Montezuma County near the entrance to the Mesa Verde National Park. The Mesa Verde Ranch Co. started a well for water in the SE cor., Section 29-36-14, and found a flow of gas in the Dakota at 702-29 feet. It gauged 220,000 feet. A second well with approximately the same results was drilled in the SW NW SE, Section 33-36-14, and a third well then was put down on the NE SE SE of Section 33 which had 52 feet of sand show-

PRODUCTION INCREASED IN CANADA RESULT OF FIELD WORK IN 1930

By Victor Lauriston
Staff Correspondent, Canadian Fields

Official figures for all Canadian fields for the first 10 months of 1930, helped out by careful estimates for the remaining two months, indicate that the petroleum production from the Dominion for the year will reach a total of at least 1,500,000 bbls. valued at $5,120,000. The figures for the various provinces given by the Dominion Bureau of Statistics are as follows:

Province—	Bbls.	Value
New Brunswick	7,000	$18,000
Ontario	113,000	231,000
Alberta	1,380,000	4,871,000

These figures compare with a production in 1929 of 1,120,693 bbls. valued at $3,790,497, and represent an increase in production of slightly over 33 per cent.

Official figures also indicate an increase in natural gas consumption over 1929. The 1930 totals, based on actual consumption for the 10 months and estimates for the two months, show for the year an aggregate of 29,565,000,000 feet from all Canadian fields, valued at $10,561,000. The 1929 production was 28,097,456,000 feet, valued at $9,891,569. Thus the percentage increase, so far as quantity was concerned, amounted to 5.2 per cent. The figures for the various provinces for 1930 are:

Province—	Cubic Feet	Value
New Brunswick	665,000,000	$326,000
Ontario	8,400,000,000	4,700,000
Alberta	20,500,000,000	5,535,000

In both oil and natural gas, the increased production came from the Alberta fields, the older provinces showing some decline.

Eastern Canada Operations

The province of Nova Scotia, witnessed, in 1930, the commencement of an important wildcat test by Imperial Oil, Ltd., in Colchester County, near Truro. This test, which was undertaken following extensive structure work, was at last reports drilling around 1,750 feet and had not yet reached a conclusive depth.

Operations in Ontario

While petroleum production in Ontario is gradually declining, natural gas production is still important. Drilling operations in Ontario in 1930 were principally carried on by the large natural gas companies, which did considerable work. In Lambton County the Union Natural Gas Co. drilled a number of tests in the Dawn Field, several of which secured gas production. The Southern Ontario Gas Co. and allied interests drilled a number of wells in the Rommey or southern end of the old Tilbury gas field. The new D'Clute Field, in Raleigh Township, Kent County, east of the Tilbury Field, witnessed a great deal of drilling, and some large wells were brought in, chiefly by the Union Natural Gas Co. The Southern Ontario Gas Co. drilled at least one good producer and several dry holes in Mosa Township, Middlesex County, near Newbury, and is continuing the testing of this area. In Brant County, the Petrol Oil & Gas Co. and the Ajax Oil & Gas Co. have opened a shallow gas field on the Six Nations Indian Reserve, and are carrying on intensive development. The gassers in this field average under 100,000 feet initial open flow.

Owing to financial conditions there was comparatively little wildcatting in Ontario in 1930. No new tests of the Trenton limestone were drilled. In an effort to revive the old Tilbury oil field, the Argo Oil & Gas Co. drilled a test near Fletcher, without success. A test for gas by the Acme Gas & Oil Co. near Mabee's Corners in Norfolk County got a satisfactory production, and additional drilling is being undertaken. There was com-

(Continued on Page 214)

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AN INVESTMENT—NOT AN OUTLAY

ing some saturation of oil at 712 feet. It is being carried down to the Sundance and at this writing is in water in the Morrison at 902 feet.

Two minor discoveries were made at shallow depths by the Standard Oil Co. of Colorado on the Chromo Dome in Archuleta County in its No. 1 Fitzhugh. NW SE SW, Section 34-33n-1e, and on the Price Dome in its No. 1 Crowley. NE cor. Section 2-32-2e. The first was drilled 502 feet and showed for a few barrels of light oil and the other had a show of gas, estimated at 250,000 feet a day, at 238 feet. No deep tests have yet indicated the importance of these showings.

WYOMING

Drilling operations in Wyoming in 1930 showed a slight increase over 1929. The increase was due principally to the number of shallow wells drilled in the Osage district in Weston County and drilling for gas in the southwestern part of the State.

The outstanding feature of exploration work conducted in 1930 was the testing of deeper horizons in the producing fields and the results were very satisfactory. Deeper horizons were proven in Salt Creek, Mahoney Dome, Lost Soldier, Dallas-Derby, Mule Creek, Lance Creek, Byron, Garland and Sand Draw for gas or oil or both. Some of these were of major importance. A new pool was opened up in the Osage district in Weston County, a discovery was made on the Midway Dome in Natrona County, a black oil pool was developed on the Pitchfork Dome in Park County and a new gas field was found on the Pilot Butte Dome in Fremont County.

The Salt Creek development was in a test started in 1929 by the Midwest Refining Co. in its No. 25-DT, NW, Section 35-40-79, with rotary equipment to explore all possible horizons below those heretofore proven. This well is on Wyoming Associated Oil Co. acreage. The third bench of the Sundance was the lowest producing horizon in Salt Creek up to the time this well was drilled. It found considerable production in the older horizons which was cased off to make the deep test. It topped the Tensleep at 3,765 feet and found it productive. This was temporarily shut off. Water was found in the Amsden, Madison and Deadwood formations and drilling stopped at 5,420 feet in the granite. At 4,605 feet it made 150,000 bbls. of sulphur water of a temperature of 83 degrees. The hole was then plugged back to the Tensleep and the 8⅝-inch pipe set at 3,775 feet. The well gauged 1,949 bbls. of black oil of 27.5 degrees gravity in 24 hours and then was shut in. The crude in a refinery test showed 13½ per cent gasoline and 27½ per cent kerosene. The discovery proved up several hundred acres which are expected to be productive in that horizon. Since this well was drilled, the rotary has been used in Salt Creek in drilling three Sundance sand wells. There were 14 wells drilled to completion in Salt Creek during the year with a new production of 6,383 bbls. daily. The field is showing a normal decline in production.

The principal wildcat discovery of the year was made on the Midway Dome in Natrona County. This structure and the Geary Dome, with the North Geary Dome lying between, are on a fold extending from the Salt Creek to the Big Muddy Field. The area has been drilled a number of times, but none of the tests ever reached the Second Wall Creek sand. In the preceding year all interests holding acreage on the structures reached an agreement for a co-operative group development plan which was approved by the Secretary of the Interior. The plan provided for the drilling of one test on each of the three structures and for unit operation in the event discoveries were made. The Midway Dome was the first to be tested, the discovery well being the Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35-79. It was drilled to 5,215 feet and on a 10 days' test averaged 400 bbls. of oil and 200 bbls. of water, the latter coming from the bottom. It was plugged back to 5,207 feet where it made around 200 bbls. a day from the second bench of the Wall Creek. The oil is 32.3 gravity crude. The Dakota, Lakota, Sundance and Tensleep, which underlie the Wall Creek, have not been tested. A well on the Geary Dome was nearing the objective at the end of the year. The three structures are controlled by the Midwest Refining Co., the Midway-Geary Syndicate (Leslie Parker and others), the Salt Creek Producers' Association and the Mountain Producers Corp.

The new black oil pool opened up was on the Pitchfork Dome in Park County. The discovery well was drilled by the Producers & Refiners Corp. for its joint account with the California Exploration Co. on the SW NW SE, Section 14-48-102. The oil was found in the Tensleep at 3,868-3,904 feet and the well after being shot four times with 400 quarts made 430 bbls. the first 24 hours. The oil tested 18.3 gravity.

The new pool opened up in the Osage Field centered in Section 14-46-64, where a number of producers were completed in the Muddy sand. The production from the field increased up to a maximum of 1,700 bbls. a day. The pay was found at around 1,600 feet. Lower formations have never been productive in Osage.

The gas discovery was made on the Pilot Butte Dome in Fremont County by the Kinney-Coastal Oil Co. in its No. 1 Dykeman, SE SW, Section 22-3n-1w. This field has produced small quantities of oil at shallow depths for a number of years. The deep test went to 4,635 feet, 135 feet in the Nugget formation. There were shows of dead oil and salt water in the Sundance. The big gas was found in a 55-foot sand in the Muddy to which the hole was plugged back and completed. It gauged 81,928,000 feet a day. There also were shows of oil above the gas. The well is shut in pending the making of some deal for the marketing of the gas.

The Prairie Oil & Gas Co. tested deeper horizons in the Little Lost Soldier Field in Sweetwater County in its No. 75-A, NW SW SW, Section 11-26-90, and opened a new pay in the Tensleep at 3,942-4,005 feet. This pool has been producing from the Wall Creek and other horizons down to the Sundance. Oil was found in the Sundance, but the results were not disclosed as drilling was continued to the deeper pay. It made 2,500 bbls. initial, the oil being of a mixed base testing 35 degrees gravity, or a little higher than the oil found in the Wall Creek.

A discovery similar to that made at Lost Soldier, though not as important, occurred in the Producers & Refiners Corp.'s No. 2, SE NW, Section 34-26-88, on the Mahoney Dome in Carbon County and on the same line of folding as the Little Lost Soldier Pool. This was a joint operation with the Midwest Refining Co. It was drilled to 4,698 feet and pumped an average of 70 bbls. of 35 gravity oil at the start. The top of the Tensleep was at 4,600 feet. The hole was crooked and the test was not a satisfactory one, but it proved a saturated horizon below the Sundance, which produces gas in other wells and is the lowest formation previously drilled.

Deeper drilling on the Byron and Garland Domes in Park County, structures which have produced gas for a number of years in upper horizons, opened up oil production. Both tests were drilled by the Ohio Oil Co. The Garland test, which was a joint operation with the Utah Southern Oil Co., was made in the Ohio's No. 1 Easton, SE cor., Section 33-56-97. It not only opened an oil pay in deeper drilling but proved a new horizon, the Madison lime, which previously had been found productive at Frannie, and one or two other places. It entered the Madison lime at 3,891 feet and was still in that formation at 4,420 feet, total depth, there being 529 feet of saturation. It is generally agreed that the well is good for a minimum of 5,000 bbls. a day, and possibly a much larger production if gas lift is applied. The oil is a heavy black crude of 18.5 degrees gravity. The discovery points to the probable productivity of the Madison lime in a number of structures throughout the Big Horn Basin whenever there is a market for that grade of oil. The Byron discovery was made in the Ohio's No. 1 Union Gas, NE cor., Section 22-56-97, in the Tensleep at a total depth of 5,414 feet. The Embar at 5,304-25 feet also showed saturation and the Tensleep was topped at 5,340 feet. It was saturated to the bottom at 5,404 feet. The Madison, in which the big production was found on the Garland Dome, and which lies below the Tensleep, was not drilled. The well was estimated at 600 bbls., but it is generally conceded that it can be made to yield a much larger quantity.

A new producing horizon below formations heretofore drilled in the Lance Creek Field in Niobrara County was opened up by the Ohio Oil Co. in its No. 4 Converse Sheep, SE SW SE, Section 32-36-65. Lance Creek, which was first brought in in 1917 with a promise of becoming one of the largest light oil fields in the State, proved to be short of expectations in the Muddy and Dakota sands and production had dropped to 200 bbls. a day when the Ohio's deep test found oil a new pay in the Sundance. At a total depth of 3,731 feet, 13 feet into the sand, it was estimated at 600 bbls. a day. The oil showed a gravity of 42 degrees in a refinery run. Since the third bench of the Sundance is the horizon in that formation yielding the big production in Salt Creek, the importance of the Lance Creek discovery is greatly enhanced. Only the one well has been drilled to the new pay.

Mule Creek, also in Niobrara County, which has been producing from the Lakota, was tested to deeper horizons by the Argo Oil Co. in its No. 7 Wehopeso, C SW NW, Section 19-39-60. Water was encountered in the Sundance and upper Embar, but at 3,178-80 feet, in the Embar-Tensleep, it found saturation and made a 300-bbl. well. It was shut in after completion. The oil has a gravity of 27 degrees. The top of the Embar was at 2,660 feet. The Argo Oil Co. and the Ohio Oil Co. control most of the acreage in the field.

The Dallas Dome Wyoming Oil Fields Co., which subsequently was taken over by the Atlantic-Pacific Oil Co., drilled two of its producers in the Dallas and Derby Fields in Fremont County down from the Embar to the Tensleep and found an increased production on both structures. Its No. 67, NE SE, Section 13-22-99, Dallas Dome, made 110 bbls. the first 24 hours from the Embar-Tensleep at 980-1,150 feet, and the Derby well, on Section 4-31-98, was deepened to 1,325 feet and made 150 bbls. first day from the Tensleep. The oil, in both discoveries, is a heavy black crude.

UTAH

Drilling operations in Utah were conducted on a small scale in 1930 and the state again failed to score. Three tests drilled to the objectives were abandoned as failures. The Midwest Refining Co., for its joint account with the Utah Oil Refining Co., tested the Paria, or Butler Valley Dome in Kane County in its No. 1 Pary, SW cor. SE, Section 14-39-1w. It tested formations of Pennsylvanian age and was abandoned in red sand at a total depth of 4,440 feet. The Cisco Springs Syndicate drilled a wildcat in the Cisco Springs district in Grand County in its No. 1 Moss, SE cor. SW, Section 9-20-23. It was abandoned in the Dakota at 2,030 feet. There was a show of gas in the top of that formation. The Cisco Dome in Grand County also was given a test by the Utah Southern Oil Co. in its No. 1 State, NE SW SE, Section 26-21-23, which was abandoned at 2,431 feet, 34 feet in pre-Cambrian granite. It topped the red beds at 2,085 feet and the Pennsylvanian at 2,300 feet. The Carbon Dioxide & Chemical Co. drilled in a carbon dioxide gas well in the SE SW, Section 12-15-11, on the Farnham Dome in Carbon County. It was drilled for a supply of gas to make dry ice in a plant to be erected at an early date. The total depth was 3,150 feet. The flow of gas was 1,500,000 feet a day.

IDAHO

Two small gas discoveries were made in Idaho in 1930 and one structural test was abandoned. The Idaho-Oregon Petroleum Corp. had a gas blowout at 1,270 feet in the Tertiary formation in its No.

(Continued on Page 222)

MT. PLEASANT PASSED MUSKEGON IN IMPORTANCE IN LAST YEAR'S WORK

By Paul A. Elliott

A year of steady production of oil and gas in addition to the opening of one small new oil pool and two new gas areas was experienced in 1930 in Michigan.

More than 3,500,000 bbls. of oil and about 1,750,000,000 cubic feet of gas were produced and sold for the second greatest annual return to the operators since Michigan was opened as a commercial oil producing state in 1925.

The previous year of 1929 was the peak period in Michigan's oil industry coincident with the peak year of the Muskegon Field, which still retains its lead as having produced more oil than any other Michigan field.

During 1930, Mount Pleasant has definitely become established as the leading Michigan field.

Muskegon dropped to about 1,250,000 bbls. while Mount Pleasant has produced about 1,000,000 bbls. more, or 2,230,000 bbls. The old Saginaw Field has continued to make about 200 bbls. a day for a total of about 60,000 bbls., giving the State a grand total of more than 3,500,000 bbls. for the year.

The Muskegon Field remined practically constant with a total of 322 producing oil wells on January 1, 1931, as compared with 332 on January 1, 1930. New wells drilled during the year in the proved Muskegon Field practically offset the former producers which were plugged and abandoned as not worth producing any longer.

The number of producing wells in the proved Mount Pleasant Field was increased from 75 at the close of 1929 to 165 at the close of 1930. In addition, 18 new oil wells had been drilled in the Leaton Pool, located several miles northwest of the original field, and eight new oil wells had been drilled in Vernon and Isabella townships between the two larger fields. This made a total of 191 for the Mount Pleasant area, or 116 more than were producing at the close of the previous year.

In addition to the increased number of oil wells in the Central Michigan area 15 dry gas wells, ranging from 500,000 to as high as 10,000,000 cubic feet in initial daily production, were completed in Vernon and Isabella Townships, Clare County, and the Broomfield Township gas field, located 14 miles due west of the original Mount Pleasant Field.

An All Time Tabulation

A table of wells drilled in the Muskegon and Mount Pleasant Fields up to January 1, 1931, follows:

Field—	Oil	Gas	Dry	Abn.	Loc.	Total
Muskegon	322	31	60	69	61	543
Mt. Pleasant	165	0	14	1	17	197
Leaton Pool	18	0	11	1	5	35
Vernon-Isabella Twnsp.	8	3	5	0	7	23
Clare County.	0	4	5	0	3	12
Broomfield Twnsp.	0	6	1	0	4	11
Mt. Pleasant Area	191	13	36	2	36	278
Grand total	513	44	96	71	97	821

Included as locations in this table are all undeveloped locations as well as present drilling wells, which are comparatively few in number. Only 11 wells were reported active in the Mount Pleasant and Muskegon areas as of January 1, 1931. About 10 other wells scattered throughout wildcat areas of the state comprised the rest of a list of about 20 active wells.

Average production of wells in the Muskegon Field dropped from about 30 bbls. in 1929 to 6 bbls. on January 1, 1931, or one-fifth the previous average.

(Continued on Page 218)

Feenberg Pipe & Supply Co., Lefors, Texas

What counts in a pipe threading machine?

ASK any experienced pipe shop operator and he will tell you it is ability to do work at a profit, not low first cost, trick names, or funny attachments.

That's why Bignall & Keeler pipe threading equipment tops the list among the wise old-timers. B & K machines have the stamina to do the hard work month after month. They have the range and capacity that lets you handle the work as it comes, large or small. They have the speed and simplicity of adjustment that makes it easy for ordinary workmen to turn out extraordinary work.

Let us send you our catalog. One of the 17 different types of B & K machines is certain to fit your need.

Bignall & Keeler Machine Works

of the N. O. Nelson Mfg. Co.

Edwardsville, Ill.

PEERLESS B&K DUPLEX P.D.Q.C

OGJ 1-29 Gray

SELF-RELIANT *and* DEPENDABLE

Inconvenient location and scant water supply do not hinder this Diesel-powered pumping station » » » »

THIS station is typical of many in which existing conditions would make trouble for any power but good Diesel engines.

The pressure in the 12-in. line served varies from 450 lb. under minimum requirement up to 700 lb. at full capacity of 70,000 barrels per day, and each of the three pumps is driven by a 600-hp. McIntosh & Seymour Engine. Two of these engines meet all line demand, leaving the third as a spare. The fuel supply is stored in the two black tanks, and the water, in the elevated tank at the left.

The arrangement for cooling the cylinder jacket water is unique in that crude oil which remains at about 70-deg. temperature throughout the year is used as the cooling medium. The heated water is cooled in the heat exchangers shown in front of the building. These subject the entering water to the cooler temperature of the oil, with double advantage; *first*, an infallible supply of cold water is made constantly available, and, *second*, the heating of the oil in the exchangers reduces its viscosity, thereby reducing pipe line friction and considerably easing the work of the pumps.

McIntosh & Seymour Diesel Engines have fully earned their reputation for supremacy in oil pumping work. First they are so ruggedly built that long-run full-load operation imposes no hardship. Service continuity is assured.

The simple construction and part interchangeability permit what little maintenance attention is required to be handled easily without recourse to outside facilities.

Then, the *sustained* low fuel rate is a protection against the gradual operating cost increase characteristic of steam prime movers as they grow older.

And where good water is scarce, the only requirement, for cylinder cooling, is insignificant compared to the amount of water used in steam boiler and condenser operation. If the water is dirty or chemically impure, a simple closed heat transfer system circulating a small amount of clean water keeps the inner jacket walls in perfect condition, while water that could not be used in boilers is entirely satisfactory for the heat transfer coils or cooling equipment.

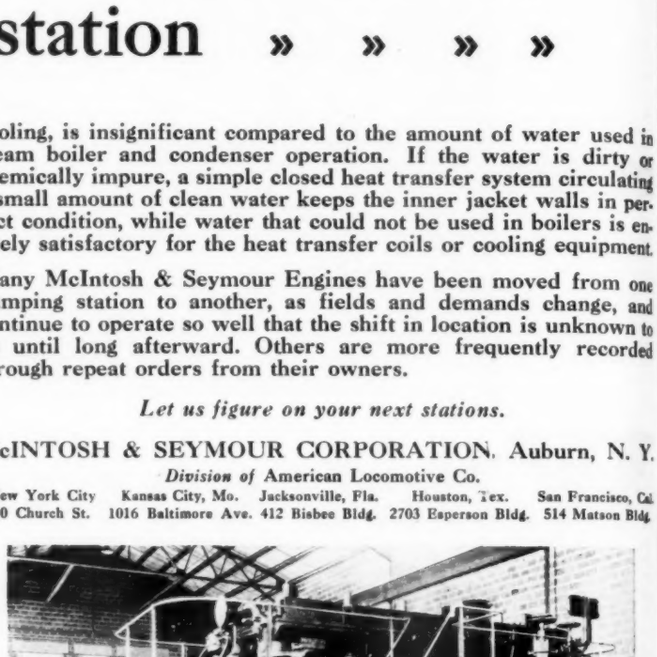
Many McIntosh & Seymour Engines have been moved from one pumping station to another, as fields and demands change, and continue to operate so well that the shift in location is unknown to us until long afterward. Others are more frequently recorded through repeat orders from their owners.

Let us figure on your next stations.

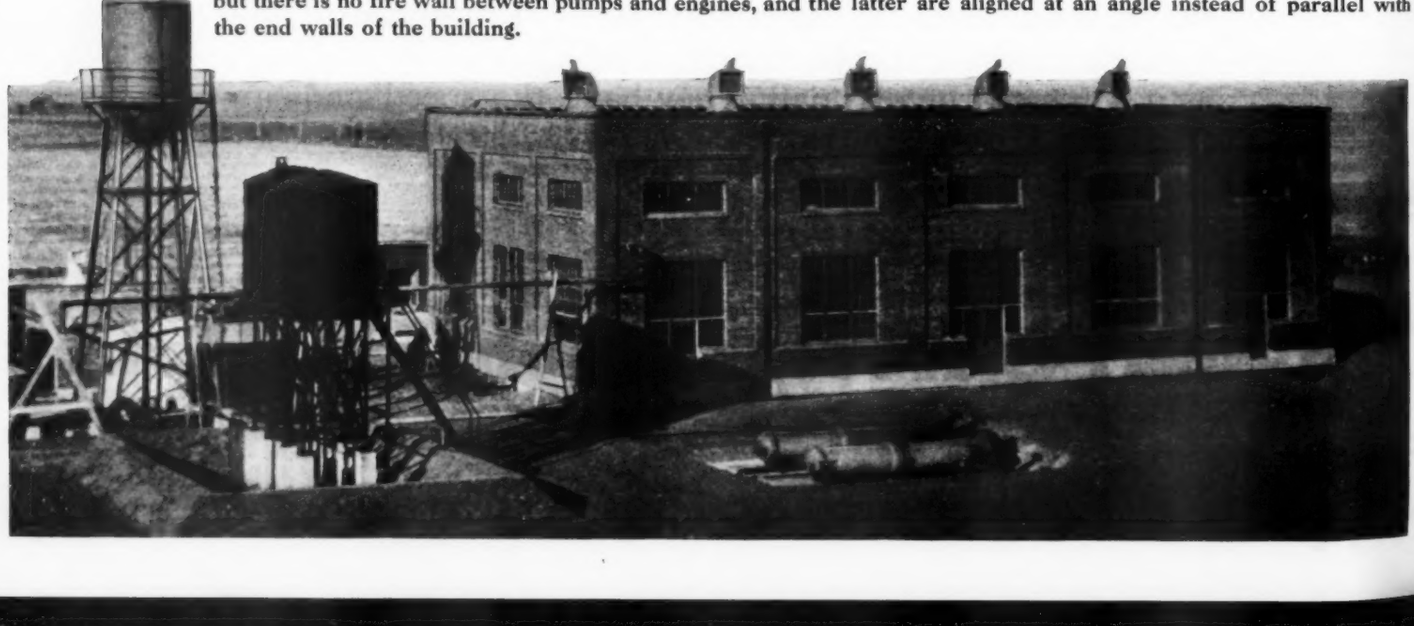
McINTOSH & SEYMOUR CORPORATION, Auburn, N. Y.
Division of American Locomotive Co.

New York City, 30 Church St. | Kansas City, Mo., 1016 Baltimore Ave. | Jacksonville, Fla., 412 Bisbee Bldg. | Houston, Tex., 2703 Esperson Bldg. | San Francisco, Cal., 514 Matson Bldg.

McINTOSH & SEYMOUR DIESEL ENGINES



The station shown below has McIntosh & Seymour Engines of the same type and size as shown in the other photo, but there is no fire wall between pumps and engines, and the latter are aligned at an angle instead of parallel with the end walls of the building.



Gas Led in Importance in Louisiana

Important Gas Discoveries in Mississippi Also Featured the Year's Work in the Arkansas-Louisiana Division

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

Discovery, or confirmation, of a gas field of commercial importance in Hinds and Rankin Counties, Mississippi, at Jackson, was the outstanding development of 1930 in the Shreveport division of the Mid-Continent oil and gas area, in a year characterized by natural gas activities of far greater extent than oil developments. Pipe line activity in the immediate vicinity of Shreveport was confined to construction of short tap lines though east of the Mississippi there was much construction and extension of lines from the Southern Natural Gas Co.'s line to Birmingham and Atlanta from the Louisiana fields to serve many communities in Mississippi, Alabama, Georgia and Florida. Deep drilling in search for production below the known horizons was more or less general throughout the territory and resulted in the discovery of two new gas fields and uncovering a lower pay in the old Bethany Field of Panola County, Texas. A lower horizon in the Monroe Field proved disappointing, most of the wells drilled to it being dry, and Trinity wells in the Bellevue district of Bossier parish also were not quite as successful as it appeared they would be on completion. Oil development was confined to continued exploitation of the Zwolle Field in Sabine Parish resulting in opening several so-called extensions of the discovery area which in reality are a collection of closely grouped producing areas of small extent, a shallow pay in Zwolle; discovery of a new pool of limited extent and production at Holly in central De Soto Parish 15 miles northeast of the original De Soto Pool at Naborton, and a similar pool at Urbana, 15 miles east of El Dorado and 8 miles south of Champagnolle Pool in Union County, Arkansas, Carterville district of northeastern Bossier Parish passed out of the picture so far as active development of the 3,100-foot sand opened in 1929 is concerned, and the pool has gone to settled production. The same is true of the Sarepta district just east of Carterville and across the line in Webster Parish.

Although existence of gas in commercial quantities at Jackson, was demonstrated by a well completed in 1929, it was not until after Jackson Oil & Gas Co. completed No. 1 Mays in Section 2-5-1e, Hinds County, as a 2,000,000-foot producer from 2,480 feet on April 2 that intensive development of the field began, but by the end of the year 48 wells had been drilled, of which 32 were producers having a total open flow capacity estimated at 941,347,190 feet. One of these, Love Petroleum Co.'s No. 1 Maley in the SE NW, Section 15-5-1e, completed November 19, making 15,000,000 feet of gas at 2,494 feet, with about 10,000 bbls. of water, was also estimated to be making 200 bbls. of 13 gravity oil and consequently was listed as a producer though, while it has been flowing into earthen storage ever since and the oil has been used as fuel in drilling operations, it can scarcely be called a commercial well. It was not the first test to make an oil show, Gulf Refining Co.'s No. 1 Rainey in NW NW, Section 13-5-1e making 15,000,000 feet of gas with a spray of this same grade of crude from 2,505 feet when completed on July 23. Production is coming from chalk rock topped, usually at around 2,450 feet completions being at depths ranging from between 2,480-90 feet to 2,500 or a few feet over.

The field, as defined by successful completions so far covers, generally speaking, an area five sections wide and five long from north to south, with wells in Sections 26-6-1e making the northeast corner; Section 28-6-1, the northwest; Section 15-5-1e, the southwest, and Section 7-5-2e, the southeast. This area is believed to entirely cover the "high" revealed by geophysical exploration conducted during and subsequent to a decidedly active leasing campaign that was general through the northeastern and central west parts of the State during the preceding two years, though several of the major companies had been holding large blocks for some time previous and maintained geologists in the state. The city of Jackson is thought to be located on the top of the dome and a number of the producing gas wells are within the city limits. So far the majority of completions have been in Sections 2 and 12-5-1e, the latter being mostly on the east side of Pearl River on which Jackson is located and which forms the dividing line between Hinds and Rankin Counties, the city being on the west bank. Whether the area will develop any oil remains to be seen but many in addition to the purely local interests are confident that it will.

Stimulated Wildcatting

The Jackson discovery stimulated wildcatting which had been going on in a desultory manner all over the State for a number of years and also revived activity in Monroe County in the northeastern part of the State where the first commercial gas in the State was developed late in 1926 but was not followed with much success. One of the largest lease transactions of the year involved the Jackson area. This was the purchase by United Gas Co., a subsidiary of the Moody-Seagraves-Electric Bond & Share-United Gas System of the gas rights on 20,000 acres, proven, semiproven and wildcat in Township 6, Ranges 1 and 2e and Township 5, Ranges 1 and 2e, held by Gulf Refining Co., and five wells with open flow of approximately 25,000,000 feet each. The price paid for these rights was not revealed. Market for the Jackson gas is afforded by United Pipe Line Corp., transporting agency of the United Gas System, line to Mobile, Pensacola and intervening points. This line, 470 miles of 18 and 16-inch pipe, was recently bought by the United from Southern Natural Gas Corp., shortly after its completion.

Louisiana Gas Fields

While the development of Jackson was going on in Mississippi, the Monroe and Richland gas fields of Louisiana were experiencing their most active year, and activity prompted by the necessity of developing sufficient gas to serve the nine trunk lines taking gas from them to cities and towns in Louisiana, Texas, Arkansas, Missouri, Illinois, Tennessee, Mississippi, Alabama, Georgia and Florida. A total of 229 wells, one-third of the total number drilled in North Louisiana territory, were completed in these two districts, only 31 of which were failures several of these being wildcats. The 199 gas producers developed a total initial daily open flow of 4,064,069,586 feet of gas. Richland's completion record was 122 wells, 18 failures, the 104 producers having a total initial daily open flow of 3,260,892,240 feet of gas. Monroe Field's 107 completions, of which 13 were failures, developed 803,177,346 feet of initial open flow. These results were divided among the parts of three parishes forming the field: Morehouse, 28 completions, 5 failures, 371,525,547 feet open flow; Ouachita, 50 completions, 7 failures, 317,023,470 feet open flow, and Union, 20 completions, one failure, 114,628,029 feet open flow.

Deeper Drilling

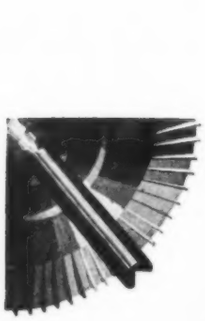
Some of the deeper drilling general throughout this division was done in Monroe and Richland Parishes. In Monroe it was the so-called Second sand, about 200 feet below the 2,100-foot horizon, but was not successful, only one or two wells of the dozen or so completed being producers. Five tests in Richland territory were unsuccessful in attempting to follow up the discovery of gas.

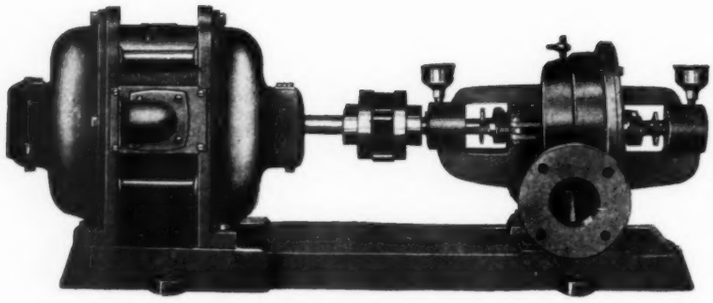
Deep drilling, however, was successful in three other localities of North Louisiana and one in East Texas, two of the Louisiana cases resulting in the discovery of new gas fields though not necessarily of new horizons, as production had previously been obtained from the same formations in Pine Island, Bellevue and Cotton Valley. Continuing exploration of the Trinity group on the Bellevue Dome in Bossier Parish which he tapped with a successful completion in October, 1929, H. I. Morgan drilled 11 more deep wells on the southern flanks of the dome during 1930 but no more than four of them were successful. Production in all but one of these successes was gas. The one oil well, No. 2 Kendrick, Section 22-19-11, made 450 bbls. initial of 50 gravity

NORTH LOUISIANA

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
CADDO (Light)—													
Daily average	9,523	10,114	10,200	9,980	8,975	9,180	9,606	9,388	9,006	8,462	8,435	8,386	
Month	295,523	280,392	316,200	299,400	278,225	275,400	297,786	291,028	270,180	262,322	253,050	259,966	3,379,472
CADDO (Heavy)—													
Daily average	2,759	3,788	2,675	2,675	2,626	2,401	2,548	2,569	2,646	2,755	2,749	2,776	
Month	85,529	106,064	82,925	80,250	81,406	72,030	78,985	79,639	79,380	85,405	82,470	86,056	1,000,142
HOMER—													
Daily average	3,706	3,575	3,605	3,472	3,593	3,471	3,531	3,515	3,459	3,410	3,357	3,308	
Month	114,886	100,100	111,755	104,160	111,383	95,130	109,461	108,965	103,770	105,710	100,710	102,548	1,268,578
HAYNESVILLE—													
Daily average	4,642	4,566	4,590	4,529	4,569	4,641	4,693	4,765	4,778	5,106	5,231	5,275	
Month	143,933	127,848	142,290	135,870	141,639	139,230	145,483	147,715	143,340	158,286	156,930	163,525	1,746,089
DE SOTO-RED RIVER—													
Daily average	2,705	2,726	3,065	3,313	3,111	3,063	3,087	3,057	3,029	2,983	2,860	2,763	
Month	83,855	76,328	95,015	99,390	96,441	91,890	95,697	94,767	90,870	92,473	85,800	85,653	1,088,179
ELM GROVE—													
Daily average	505	461	450	430	407	403	438	466	510	551	521	518	
Month	15,655	12,908	13,950	12,900	12,617	12,090	13,578	14,446	15,300	17,081	15,630	16,058	172,213
BELLEVUE—													
Daily average	631	591	660	623	653	615	643	723	747	649	703	572	
Month	19,561	16,548	20,460	18,690	20,243	18,450	19,933	22,413	22,410	20,119	21,090	17,732	237,649
COTTON VALLEY—													
Daily average	2,240	2,101	2,355	2,147	2,190	2,110	2,062	1,979	1,882	1,878	1,864	1,844	
Month	69,440	58,828	73,005	64,410	67,890	63,300	63,922	61,349	56,460	58,218	55,920	57,164	749,906
URANIA—													
Daily average	5,163	5,110	5,290	5,260	5,262	5,131	5,216	5,260	5,163	5,360	5,309	5,111	
Month	160,053	143,080	163,990	157,800	163,122	153,930	161,696	163,060	154,890	166,160	159,270	158,441	1,905,492
PLEASANT HILL—													
Daily average	888	826	715	725	635	583	587	547	518	485	482	449	
Month	27,528	23,128	22,165	21,750	19,685	17,490	18,197	16,957	15,540	15,035	14,460	13,919	225,854
ZWOLLE—													
Daily average	3,705	4,565	4,140	4,221	3,390	3,835	3,606	4,512	4,382	6,667	9,147	9,225	
Month	114,855	127,820	128,340	126,630	105,090	115,050	111,786	139,872	131,460	206,677	274,410	285,975	1,867,965
HOLLY													
Daily average	.....	.....	.....	1,135	783	1,399	1,271	1,076	1,036	927	1,062	982	
Month	.....	.....	.....	34,050	24,273	41,970	39,401	33,356	31,080	28,737	31,860	30,442	295,169
SAREPTA-CARTERVILLE—													
Daily average	1,056	2,334	3,270	3,440	3,377	3,489	3,135	3,446	2,646	2,580	2,360	1,970	
Month	32,736	65,352	101,370	103,200	104,687	104,670	97,185	106,826	79,380	79,980	70,800	61,070	1,007,256
Daily average	37,534	40,657	41,015	41,950	39,571	40,021	40,423	41,303	39,802	41,813	44,050	43,179	40,942
Total 1930	1,163,554	1,138,396	1,271,465	1,258,500	1,226,701	1,200,630	1,253,113	1,280,393	1,194,060	1,296,203	1,322,400	1,338,549	14,943,964
Total 1929	1,114,171	990,024	1,109,986	1,069,200	1,097,121	1,068,960	1,110,172	1,125,486	1,037,250	1,224,717	1,147,200	1,196,879	13,291,166
Total 1928	1,369,146	1,313,555	1,369,115	1,411,890	1,383,034	1,272,040	1,306,433	1,246,200	1,177,920	1,196,669	1,163,400	1,155,091	15,367,493
Total 1927	1,589,122	1,474,004	1,589,711	1,511,250	1,469,710	1,435,020	1,751,376	1,748,067	1,567,320	1,591,347	1,506,210	1,469,950	18,703,087
Total 1926	1,343,788	1,288,000	1,511,219	1,556,580	1,830,705	1,809,180	1,780,175	1,761,513	1,703,190	1,801,224	1,696,411	1,689,655	19,771,640





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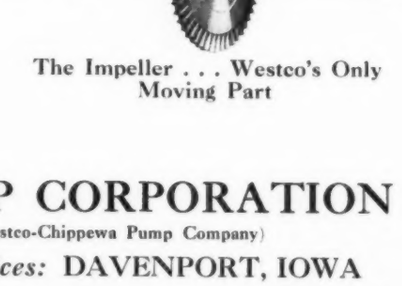
deliver

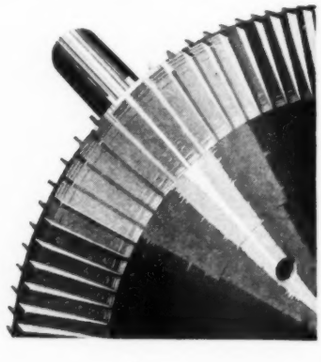
Multi-Stage Performance in Single Stage Construction

Here's how they do it—Liquid is pumped by the rotation of a solid, one-piece impeller which operates without metal to metal contact with the pump casings. This impeller is vaned on both sides at its periphery. It is these vanes that force the liquid around the pump chamber and send it charging through the outlet. Westco, with its multi-vaned impeller, is virtually "100 PUMPS WITHIN A PUMP." * * * *

Even though Westcos have but one impeller, they are capable of performance that is comparable to multi-stage pumps having many impellers. Westco users benefit by this pump's ultra-simplicity in the form of lower cost, longer pump life and trouble-free operation. Write TODAY for interesting catalog and engineering data, also a list of the many applications for which these long-lived and efficient pumps are serving the oil industry.



The Impeller . . . Westco's Only Moving Part



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oil from 8 feet of sand, total depth 1,800 feet, through a three-quarter-inch choke. Production declined rapidly, however, and it wasn't long before salt water broke in. Initial open flow of the gas wells has been around 40,000,000 feet at total depths hugging 1,800 feet, but, as in the case of the one oil well, production dropped rapidly and salt water shortened the productive life of the wells appreciably.

The first deep wildcat success during the year was that of Triangle Drilling Co. in the Sugar Creek area of Claiborne Parish, 12 to 15 miles southeast of Homer production. Triangle, associated with Standard Oil Co. of Louisiana and Louisiana Gas & Fuel Co. in the development of the area which so far is confined to Sections 6 and 7-19-5, completed No. 1 Kirkpatrick in Section 7 at 4,540 feet on March 6, making 1,000,000 feet of gas and 20 bbls. of fluid, half of it water. Subsequently it was deepened 18 feet but without improving results. Since then they have completed four more gas wells having a total initial open flow of 141,000,000 feet of gas at pressures around 1,800 pounds in oolitic lime at approximately the same depth. The gas is about the richest that has been found in this division, testing as high as 1,000 gallons to the million feet. Louisiana Gas & Fuel Co., a United Gas System subsidiary, is processing the gas in a recently completed plant of 30,000,000-foot daily gas capacity at Athens, whence the dry gas is piped 10 miles to United Pipe Line Co.'s trunk line from Monroe to Latex (Panola County, Texas), compressor station.

This discovery preceded by five months the discovery of commercial gas from the same horizon but at 5,000 feet in the northwest corner of Caddo Parish. On August 6, R. W. Norton completed No. 1 Hill, Section 33-23-16, making 11,500,000 feet of gas at 2,250 pounds rock pressure from 16 feet of lime streaked with sand, total depth 5,506 feet. The gas tested 819 gallons per million feet and is being processed at Louisiana Gas & Fuel Co.'s plant in the Pine Island district of Caddo before going into the United's Monroe-Latex line. Texas-Louisiana Production Co., another United subsidiary, is drilling two more wells in Sections 33 and 34-23-16, both of which, as this is written, are nearing 5,000 feet. Prior to Norton's well, several other wildcats to this and somewhat shallower depths had been drilled in the vicinity by Ohio Oil Co. and other prospectors.

Possibilities of the Trinity horizons in the Bethany gas district of Panola County, Texas, indicated by completion a year or so before of a big gas well at around 4,700 feet, were emphasized by Arkansas-Louisiana Pipe Line Co.'s No. 2-A Brumble in the B. C. Jordan survey completed December 19, making 41,000,000 feet of gas at 2,100 pounds rock pressure from 4,746 feet, which corresponds to the 2,900-foot level in Pine Island. As a consequence two or three wells already under way or just starting will be drilled to the new horizon instead of stopping in either of the several shallower sands and numerous others, already producing, will be deepened when their output begins showing appreciable decline.

Deeper drilling in DeSoto Parish had mixed results. Most of such exploration was done by Arkansas-Louisiana Pipe Line Co., which followed a salt water hole at 3,175 feet on the Scott farm in Section 32-14-13, six or eight miles north of Holly, with No. 2 Scott, pumping 50 bbls. of fluid, 50 per cent water, at 2,790 feet. No. 1 was dry at 2,915 feet and filled up 500 feet in water at 2,989 feet, drilled on to 3,175 feet and quit. The same company, a subsidiary of the Arkansas Natural Gas Corp., drilled on the edge of the old Spider district south of Mansfield and got one gas well and two dry holes. No. 1 Johnson, Section 7-11-13, made 13,000,000 feet of gas at 960 pounds from 2,865 feet but there was water with it and it was deepened to 3,054 feet where it was finished in April as a 3,000,000-foot gasser. No. 2 on the same lease was a dry hole at 3,200 feet after a dry test at 2,891 and 2,900 feet and No. 3 Johnson in Section 1-11-14 was a dry hole at 3,190 feet after testing gas with salt water at 2,930-85 feet. Odell & Lawton surprised the fraternity when they completed No. 1 Harris, NW SE, Section 11-13-14, 3 miles southwest of Holly production, making 20,000,000 feet of gas with a spray of water from 3,150 feet, 10 feet below where Danciger Oil & Gas Co. had abandoned it as a dry hole several years before. This success, however, was followed by a failure on No. 1 Tidwell-Tull, half a mile northwest, which was a water hole at 3,095 feet. J. W. Clark, drilling No. 1 Tidwell in Section 22-13-14 2½ miles southwest of Odell & Lawton, is a critical well. It had 12 feet of sand showing oil at 2,933 feet and tested dry, repeating the performance at 2,950 feet, and blew out at 3,096 feet with an estimated 5,000,000 feet of gas and a spray of oil and went dead. Several days later it was standing 1,300 feet in oil, swabbed to the bottom and stood over night during which oil rose 300 feet in the hole. Two days later it was 500 feet in fluid, 80 per cent water, was swabbed again and bridged. Drilled to 3,130 feet, it was full of water with a show of oil and gas, failed to cut off the water by cementing bottom and is shut down while being financed for a 5,000-foot test.

Pelham & Bundy, drilling at Grand Cane, 6 miles northwest of Mansfield, completed a small producer from what may be a stray sand at 2,985-90 feet, No. 1 Rhodes pumping 12 bbls. oil and 15 bbls. of salt water from five feet of sand, total depth 3,009 feet.

Holly a Disappointment

Holly proved to be a big disappointment. Opened March 19 by R. O. Roy with No. 1 Farmer in Section 5-13-13, making 2,600 bbls. initial from 2,880 feet, it looked for a while like a pool of major proportions and the Standard Oil Co. bought Roy's holdings and the well for $3,000,000, half cash, half oil, and an overriding royalty. It wasn't long, however, until development proved the pool to be a closely grouped half dozen wells in the north half of the discovery section with one or two others to the north in another section, surrounded and offset by dry holes and salt water tests. It was another Dixie Pool, only worse. It did, however, encourage wildcatting that led to the Odell & Lawson, J. W. Clark and Pelham & Bundy tests just referred to.

Zwolle's Scattered Pools

Zwolle, as stated in the beginning, was the one active area in the whole territory so far as developing previously discovered production is concerned. That development has shown Zwolle, thus far, to be a collection of isolated pools of restricted size scattered in an area 12 miles east and west and 3 miles north and south. With many thousand acres in this area yet to be tested, it is probable that Zwolle will be in the news for some time to come, particularly since there are two horizons, the marl at 2,300-2,400 and the chalk at 2,600 feet, to be explored. Blue Lake, several miles west of Zwolle proper but included in Sabine proven territory, scene of the original Zwolle production, hasn't turned out so well, as, aside from the group of producers in Section 14-7-14, only one test has been successful. Zwolle's active development began early in the year immediately after the discoverers, R. L. Gay and W. E. Cook, sold their "Loring Block" to Benedum & Trees for $3,000,000, half cash, half oil, and the latter, organized as Loring Oil Co., went to work. A flock of independents went in and developed small leases, only the smaller half of which were successful. The record shows 155 completions in Sabine, 99 per cent in Zwolle, 90 dry holes, six gas wells and 60 producers with a total initial open flow of 30,969 bbls. during the year. A number of locations were abandoned without ever having been drilled. Zwolle is a freakish area, production coming from breaks in the chalk or from the marl, and it is a question of a gambler's chance whether an offset to a producer hits the same break from which that well is producing.

Search for deeper production, Blossom sand in this case, has not been lacking in Zwolle but so far has failed in both proven and wildcat territory, although tests were drilled as deep as 4,792 feet.

While on the subject of deep holes, Arkansas Natural Gas Co.'s No. 5-F Urania and Magnolia Petroleum Co.'s No. 1 McCook & Hibbler in Cotton Valley are worth mentioning. The former, in Section 24-10-1e, LaSalle Parish, is northeast Louisiana's deepest test and rather definitely demonstrates the futility of trying to develop deeper pay in the Urania Pool. It was drilled to 6,432 feet and was dry all the way down except for a small show of gas at 4,740-65 feet and much salt water from a sand at 5,923-35 feet. The Magnolia well in Section 22-21-10 Webster Parish, is this district's record deep test. Begun in November, 1928, it was under way all of 1929 and until January 29, 1930, when it was abandoned as a dry hole at 7,006 feet. The first test was in the 4,700-foot horizon where earlier wells had made good gassers but this one showed for less than half a million feet at 4,722 feet. Subsequent tests were: salt water at 4,812 feet, gas at 5,450 feet, slight show of oil at 6,804-13 feet and 6,949-58 feet, hot salt water and oil at 6,965 feet.

Successful Repressuring

While it had been done on a limited scale elsewhere in the division, repressuring an old pool on a large scale was tried for the first time in Haynesville, the Gulf Refining Co., Ohio Oil Co. and Louisiana Oil Refining Corp. sharing in the experimental work which was first begun in the fall of 1929. Results of the early tests were such as to recommend application of the system on a large scale and, beginning in March, 1930, more wells were added until by the end of the year more than 300 wells in an area of 3,640 acres were being produced by this means, their output increased by more than 15 per cent above what it was before repressuring was tried. During 1931 the system will be applied to more wells but it is doubtful if it will be tried in other fields than Haynesville, as they are not so well suited from a physical standpoint as well as because of ownership factors at Haynesville.

Arkansas Quiet Year

Except for Urbana, a wildcat producer in Miller County and some drilling in north Central Arkansas proven and prospective gas fields, Arkansas was almost out of the picture. Development of production at Urbana was a case of redrilling an old gas area. Current development, which has not been particularly active, began with Marine Oil Co.'s No. 3-2 Thompson, Section 10-18-13, completed in January, making 465 bbls. oil, with salt water, at 3,535 feet. A dozen wells were completd during the year, most of them making considerable water with the oil and five of them complete failures. Total initial production was 2,325 bbls. of 20.5 gravity oil.

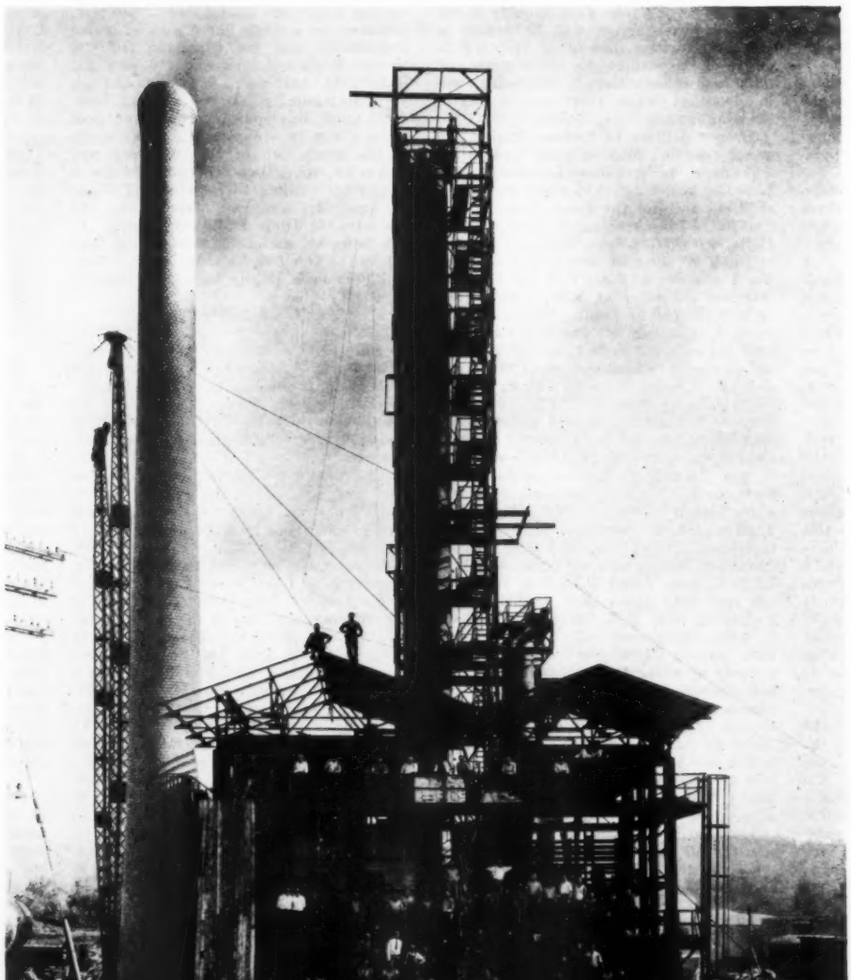
Miller County in the southwest corner of the State on the Louisiana line, has been rather thoroughly drilled during the last 10 years but it was not until C. V. Lenz completed No. 1 Johnson in Section 24-15-26, 20 miles east of Texarkana that any production had ever been obtained. No accurate information on the well was ever given out and while it was claimed to have made 350 bbls. initial

(Continued on Page 220)

ARKANSAS

Daily Average and Monthly Production of Crude Oil in 1930.

	January (bbls.)	February (bbls.)	March (bbls.)	April (bbls.)	May (bbls.)	June (bbls.)	July (bbls.)	August (bbls.)	September (bbls.)	October (bbls.)	November (bbls.)	December (bbls.)	Total (bbls.)
EL DORADO—													
Daily average	4,272	3,080	3,995	3,977	4,055	4,075	4,146	4,183	4,009	4,082	3,919	3,953	
Month	132,432	86,240	123,845	119,310	125,705	122,250	128,526	129,673	120,270	126,542	117,570	122,543	1,454,906
SMACKOVER (light)—													
Daily average	5,480	5,165	5,310	5,302	5,053	5,240	5,155	5,092	4,967	4,965	4,842	4,744	
Month	169,880	144,620	164,610	159,060	156,643	157,200	159,805	157,852	149,010	153,915	145,260	147,064	1,864,919
SMACKOVER (heavy)—													
Daily average	40,288	41,361	41,290	40,414	36,591	39,307	37,513	37,185	36,082	36,363	35,744	35,282	
Month	1,248,928	1,158,108	1,279,990	1,212,420	1,134,321	1,179,210	1,162,903	1,152,735	1,082,460	1,127,253	1,072,320	1,093,742	13,904,390
STEPHENS—													
Daily average	1,006	991	925	960	946	947	927	929	917	889	885	878	
Month	31,186	27,748	28,675	28,800	29,295	28,410	28,737	28,799	27,510	27,559	26,550	27,218	340,487
NEVADA COUNTY—													
Daily average	1,132	1,111	1,090	878	957	931	1,018	1,007	1,012	1,025	1,021	1,014	
Month	35,092	31,108	33,790	26,340	29,667	27,930	31,558	31,217	30,360	31,775	30,630	31,434	370,901
LISBON—													
Daily average	1,067	1,032	1,035	1,025	1,006	974	942	939	905	872	903	852	
Month	33,077	28,896	32,085	30,750	31,186	29,220	29,202	29,109	27,240	27,032	27,090	26,412	351,299
BRADLEY—													
Daily average	75	84	81	80	78	64	65	65	65	64	65	63	
Month	2,325	2,352	2,511	2,400	2,418	1,920	2,015	2,015	1,950	1,984	1,950	1,953	25,793
CHAMPAGNOLLE—													
Daily average	5,206	4,470	4,770	4,705	3,914	4,232	4,355	4,369	3,756	3,612	3,441	3,514	
Month	161,386	125,160	147,870	141,150	121,334	126,965	135,005	135,439	112,680	111,972	103,230	108,934	1,531,120
MOUNT HOLLY—													
Daily average	109	148	145	141	115	102	98	96	88	76	71	70	
Month	3,379	4,141	4,495	4,230	3,565	3,060	3,038	2,976	2,640	2,356	2,130	2,170	38,183
URBANA—													
Daily average	.....	.....	.....	.....	831	930	1,061	977	972	844	1,038	951	
Month	.....	.....	.....	.....	27,761	27,900	32,891	30,287	29,160	26,164	31,140	29,481	232,784
Daily average	58,635	57,442	58,641	57,482	53,545	56,802	55,280	54,842	52,776	52,792	51,929	51,321	55,103
Total 1930	1,817,685	1,608,376	1,817,871	1,724,460	1,659,895	1,704,060	1,713,680	1,700,102	1,583,280	1,636,552	1,557,870	1,590,961	20,114,782
Total 1929	2,453,526	2,154,194	2,303,734	2,188,680	2,220,158	2,112,270	2,137,047	2,086,083	1,959,720	2,000,027	1,911,060	1,917,071	25,443,570
Total 1928	2,791,922	2,571,575	2,687,948	2,472,600	2,843,847	3,075,911	2,792,139	2,711,787	2,540,070	2,652,848	2,476,080	2,521,571	32,137,934
Total 1927	4,076,469	3,574,256	3,853,920	3,378,240	3,493,669	3,365,760	3,406,683	3,242,600	3,032,970	3,117,298	2,906,760	2,962,750	40,411,375
Total 1926	5,489,604	4,756,826	5,115,837	5,127,510	5,482,939	5,064,760	5,019,892	4,878,191	4,603,230	4,625,138	4,299,480	4,266,189	58,729,606



Flexible Distillation Equipment

Flexibility in the operation of Foster Wheeler refinery equipment is illustrated by the atmospheric crude distilling unit here illustrated. The rerun unit (at the right) is designed for handling alternately pressed wax distillate and cylinder stock solution.

The atmospheric unit, when handling Pennsylvania crude, will continuously recover to specifications, gasoline, naphtha, kerosene, gas oil, wax distillate and cylinder stock bottom with provision for the removal of heavy wax distillate and an overhead cylinder stock. With no further modification to the plant, the unit can process Mid-Continent crude, continuously recovering gasoline, naphtha, kerosene, gas oil, two fractions of wax distillate, overhead cylinder stock and flux bottoms.

The side streams from the tower are brought to specifications by a special type weir control valve. Due to the inherent characteristics of these valves in combination with the internal stripping sections, manual operation of the side stream control is never necessary unless it is desired to change the specifications of the side stream products.

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FOSTER WHEELER

Kentucky Pools Developed Slowly

Decline in Completed Work and in Total Production Caused by Curtailment of Operations in Low Price Period

By George A. Whitney
Staff Correspondent, Kentucky-Tennessee

Fewer wells were completed in Kentucky in 1930 than in 1929, due to the shutdown movement which started on December 15, 1929, and still continues as far as the Tri-County or Owensboro Field is concerned. The only wells drilled for the greater part of 1930 in the Owensboro Field, were offsets, or to conform with lease conditions. The Owensboro Field has shown remarkable staying qualities for a shallow development, and was the backbone of the drill before the shutdown movement was started. The Stray sand formation in this field brought forth some very large initial producers and there is still room for several times more than have yet been drilled, but Owensboro operators have stood pat on the shut down, as they figure that at present crude prices the oil is better in the ground than above it.

During 1930 1,113 wells were completed in Kentucky, of which 636 were oil producers with an initial production of 37,745 bbls.; 320 dry holes and 157 gas wells. When compared with the 1929 figures these show a decrease for 1930 of 271 completions; 261 less producers; 12,360 bbls. less production; 85 less dry holes; and 75 more gas wells.

Ohio County leads in number of wells completed, being credited with 427 completions, 243 producers with an initial of 11,794 bbls., 122 dry holes and 62 gas wells. Daviess County comes second with 178 completions, 107 producers, with an initial of 4,329 bbls., 62 dry holes and 9 gas wells. Henderson County forged forward with 122 completions, 69 producers with an initial production of 1,183 bbls., 39 dry holes and 14 gas wells. McLean County made a good showing with 57 completions, of which 32 were producers with an initial of 1,653 bbls., 23 dry holes and 2 gas wells.

The real sensation in Kentucky oildom for 1930 was born in September when Norris & Smith drilled a wildcat test on the Lewis McKinney farm, close to the village of Legrande, in Hart County, which showed a nice volume of gas, along with an initial of 240 bbls. of oil from a depth of 642 feet and in the Corniferous formation. This well caused great excitement and owing to the shut down in the Owensboro Field, many of the idle drilling outfits were rushed to the new area which had all the earmarks of another important field similar to that found in the Sinking Creek Field in Lee County some few years ago, and this has already proved true. There were 88 wells completed from the date of the discovery well until December 30, of which 59 were oil wells with an initial production of better than 16,645 bbls., 16 dry holes and 13 gas wells.

Hart County Gushers

In October, Norris & Davis drilled No. 2 on the Lewis McKinney farm on which the discovery well was found in the Legrande Pool, which was said to produce 500 bbls. from the Corniferous formation at around 650 feet, a nice gas volume being found at 480 feet. Same operators drilled a 500-bbl. initial well in No. 1 Nanny McKinney farm, at Seymour, and same parties found one for 125 bbls. on the Bob Hatcher, same area.

November proved a big one for the new field, the largest well being Carpenter & Frost's No. 1 Carden-Dowling lease, which was reported at 800 bbls. Rex-Pyramid Oil Co.'s Nos. 1 and 2 W. E. Peyton No. 3 tract, produced initially 375 and 450 bbls., respectively. H. F. Norris and others' No. 2 E. T. Smith, rated at 1,050 bbls., and numerous others ranging from 75 to 350 bbls.

The largest producer found in Hart County came in December when Bales, Peyton, Clymor and others' No. 1 on the W. E. Peyton 16 acres, produced 1,400 bbls. in 12 hours and 2,500 bbls. in 24 hours. Indiana Oil Syndicate's No. 1 George Whitlow, same pool, produced between 750 and 1,000 bbls. initial. Milt Snyder and others' No. 1 Mrs. Mertie Richardson, to the north edge of the pool, produced 500 bbls.; L. C. Young's No. 1 Legrande McGhee, 375 bbls.; Rex-Pyramid Oil Co.'s No. 1 W. E. Peyton tract 2, 275 bbls.; and No. 1 on the Alice Peyton farm was estimated better than 500 bbls. Basters, Claypool and others' No. 1 R. C. Perkins, to the extreme north side of the pool, was another 500-bbl. initial producer, while less than half a mile north of this big well, a dry hole was found on the Charles Davidson farm. Carpenter, Frost and others' Nos. 2 and 3 Coats heirs, produced 300 and 450 bbls., while their No. 1 on the Coats heirs No. 2 farm, produced 650 bbls. Unknown parties' Nos. 1 and 2 Lucy Edwards farm, showed initial production of 300 and 350 bbls.

In Green County, just east of Hart County, unidentified parties drilled a purely wildcat venture on the Walter F. Milby farm, a mile from Greensburg, and struck a gas well estimated at 5,500,000 feet, and much drilling will be done in that vicinity from now on, unless too many dusters are found.

Other Kentucky Wells

In January, in Daviess County, the Ohio Oil Co.'s No. 1 Johnson, rated at 100 bbls. Benedum-Trees Co. reported a 5,000,000-foot gas well in a test on the W. E. Drake estate, in the Greenville area of Muhlenberg County, at a depth of 863 feet. United Carbon Co.'s No. 1 Wade Cassidy, on Lykins Branch, 4 miles from Pikeville, Knox County, produced 2,000,000 feet of gas.

In February, in Ohio County, Cumberland Petroleum Co.'s No. 1 S. L. Lloyd, in the Buford Field, produced 100 bbls. from the Stray sand. Missouri-Kansas Pipe Line Co.'s No. 2 Lester, in Hopkins County, reported with a volume of 3,500,000 feet of gas.

In March Hupp & Duff's No. 1 Dawson, in the Buford Pool, Ohio County, showed 250 bbls. Charles H. Young and others' test on the Dr. Charles Criss, in Red Hill near the L.&N.R.R., in the northeastern part of Christian County, produced 2,000,000 feet of gas at 561 feet.

In April, in Ohio County, Cumberland Petroleum Co.'s test on the David Brooks 120 acres in the Haynesville Field, same county, produced 150 bbls. from a depth of 333 feet. In May the same company's test on the Moseley farm, Buford Pool, same county, 250 bbls. initial. In Daviess County Johnson Oil & Refining Co.'s test on the E. R. Eaty, near Habit, and 5 miles northeast of the Jones Pool, showed 100 bbls. initial. Ohio Oil Co.'s No. 1 Ransom Lee, near Depoy, 3½ miles southeast of Greenville, in Muhlenberg County, showed a volume of 1,500,000 feet of gas, and 150 bbls. initial from 1,820 feet, and Ellis & Young's No. 1 Eaves Kennedy, same county, 150 bbls. initial.

In June, Thrasher Brewer and others' No. 1 Bud St. Clair farm, near Dundee, in Ohio County, estimated at 2,750,000 feet at 330 feet. Miller & Damron's No. 1 Dunn farm, McLean County, 100 bbls. Consolidated Utilities Co.'s No. 1 Jamieson farm, in Metcalf County, estimated with a gas volume of 4,500,000 feet. Unknown parties drilled in a 2,000,000-foot gas well on Red Bird Creek, in Bell County, in eastern Kentucky.

In September, Chester Oil Co.'s No. 1 William Bates, in the Pellville Field of Hancock County was reported with a volume of 2,000,000 feet of gas from the Barlow sand.

In November, James C. Ellis and others struck a 100-bbl. initial producer in No. 1 Magnolia Smith farm, in the Barnetts Creek Pool, of Ohio County. J. R. Pointer and others reported a 2,000,000-foot gas well at a second test on the W. H. Lyons and others farm, in the same county. Vickers Brothers and others' test on the M. D. Wells farm, in Daviess County, produced 100 bbls., in 10 hours from a stray sand found from 850-900 feet. James C. Ellis and others' No. 1 Hattie R. Monroe, in the Pellville Field of Hancock County, showed 100 bbls. initial after given a shot. In Cumberland, County the Cumberland Petroleum Co.'s No. 1 Willie Brake farm, on Bear Creek, reported at 50 bbls. at 357 feet. T. J. Asher and others' test on the J. A. Hemminger, in the Red Bird section of Bell County and near the Clay County line, reported at 3,000,000 feet of gas initially.

In December, Mel Root and others' wildcat on the W. Thorp farm, near Liva, in Daviess County, reported at 50 bbls. at 1,635 feet. Henry K. Miller and others' No. 1 Jack Falls farm, near Easton, in the Pellville Field of Hancock County, reported with a volume of 3,000,000 feet with 5 feet of gas sand.

Production Held Back

Largely because of the low prices for oil and the consequent curtailment movement in Kentucky, the production of crude oil for the year fell off somewhat from the total production in 1929. The record of 1930 was 7,370,000 bbls. while that of the previous year was 7,821,000 bbls.

(Continued on Page 224)

CURTAILMENT OF PRODUCTION HIT EASTERN FIELDS HARD IN 1930

By L. H. Walter

Conservation and curtailment left their mark on drilling operations in the Eastern Field during the year 1930 with all districts producing Pennsylvania grade crude oil showing fewer completions and less production. Drilling declined throughout every district of the Eastern Field during the year as compared with 1929 when Pennsylvania grade crude was in the $4 a barrel column.

Notable curtailment of drilling took place in the Bradford-Allegany fields and in the western Pennsylvania fields during the year. In the Bradford-Allegany fields the five-spot drilling program was halted quickly when the price of oil began to decline and the supply became larger than the demand.

During the year there were 3,874 wells completed in the Eastern Field with an estimated initial daily production of 20,442 bbls. Four hundred and thirty-eight of the wells were dry holes and 667 were gas wells.

In 1929 there were 5,887 completions in the Eastern Field, 2,013 more than in 1930. Initial daily production in 1929 was 27,220 bbls., a total of 6,778 bbls. daily over the 1930 initial. In 1929 there were 452 dry holes, 14 more than in 1930, and 702 gas wells, 35 more than in 1930.

Gas Boom in Eastern States

Search for natural gas production was given impetus throughout the year 1930 in the eastern fields by an increased demand for this product. In West Virginia, southeast Ohio, southwest Pennsylvania and western Pennsylvania this search was continued unabated throughout the year in proven territory.

Several new gas fields were opened up for production during the year the most notable being in Tioga County where a test drilled by Allegany Gas Co. came in on the John Palmer farm with a production of 20,000,000 cubic feet daily. The volume was unexpectedly large and the well ran uncontrolled for several days until western methods could be used to tame it. Six miles of pipe line was laid to the main line of the company to take care of the production. Several thousand leases were signed in the vicinity within a few weeks afterwards and active drilling undertaken by several major companies. At the end of the year none of the wells had been completed. The production was found in the 4,000-foot level.

Gas production in paying quantities was also found in the Finger Lakes section of New York State and several strings of tools were put to work there. Several hundred leases were filed during the year and some medium volume production found. At the close of the year 23 strings of tools were active in several counties in New York and Pennsylvania, with Corning, N. Y., as headquarters town.

In the vicinity of DuBois and Clearfield, in Jefferson and Clearfield Counties, Pennsylvania, considerable leasing was done during the year and several tests set to drilling.

Lower Eastern Fields

In the lower Eastern fields during 1930, there were 374 fewer wells completed than in the preceding year and it is notable that there were but 32 fewer gas wells and 5 fewer dry holes. Thus the large difference is explained by the fact that there was less drilling for oil during the past year than heretofore which is reflected by the 337 fewer oil wells completed. The average initial production per well was slightly greater than the previous year.

Oil

In view of the low price of Pennsylvania crude oil and the production curtailment, it was but natural that there were no attempts made to do any wildcat work in a region which offers so little opportunity for it and in view of the fact that operators in well defined oil territory had ceased to drill for it except for protection. In West Virginia there were no new extensions opened, and in southwest Pennsylvania but one well which has given promise of any extension of territory, and even this one will not be exploited until conditions improve. In southeast Ohio, the most productive areas were in the deep sand territories of Wheeling Township, Guernsey County, where the Niagara lime was productive at 3,500 feet; in Fallsbury Township, Licking County, in the Clinton sand at 3,000 feet; in Hopewell Township, Muskingum County, in the Clinton sand at 4,100 feet, and in Jackson Township of the same county in the Clinton sand at a depth of 3,200 feet. In both Medina and Washington Counties the shallow sands have been found productive and are extensively operated. These sands, the Mitchell, the First and Second Cow Run, the Buell, and 500 foot, are found in a depth range of from 275 to 600 feet and follow well defined direction with an occasional fault.

Gas

It was hoped that the new lines to eastern markets would have been in use by the end of 1930 and that it would have created a stimulus for added drilling of

(Continued on Page 220)

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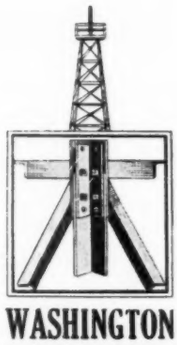

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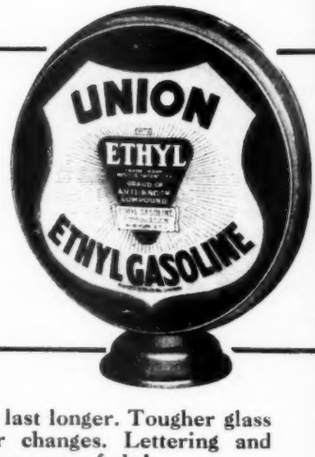

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SELL MORE GASOLINE AND OILS

ROCKY MOUNTAIN AREA

(Continued from Page 56)

an acre. However, the bidding showed no such figures. Most of the land on the structure belongs to the Government and the Department of the Interior is said to have been desirous of bringing it under unit operation under the law which expires on January 31. The sale provided for only the gas sands in the Frontier coming under the unit agreement, but also provided that other gas sands reasonably likely to produce oil, or sands containing oil, shall not be produced, but the wells shut in in the event of discoveries. While lower horizons are believed almost certain to produce oil when drilled, the principal untested formations are expected to contain black oil, for which there is but little market. The unwillingness of operators to take on heavy investments in the face of the existing depression upon which they cannot hope to realize for some time, also is believed to have been a factor influencing the bidders.

There were few bids offered. Unit No. 1, containing 640 acres, was bid in by Midwest Refining Co. for $14,560, or $22.75 per acre. Unit No. 2, in which there are 640 acres, was bid in by Ohio Oil Co. for $16,960, or $26.50 per acre. Unit No. 3, containing 549.79 acres, went to Custer Petroleum Co., a company largely controlled by stockholders of Ohio Oil Co. T. A. Pedley bid in Unit No. 4, consisting of 578.64 acres, for $2,893, or $5 per acre. The sale is subject to confirmation by the Secretary of the Interior.

Geary Dome

Midwest Refining Co.'s No. 11, SE NW NW, Section 32-34-77, Geary Dome, Natrona County, between the Salt Creek and Big Muddy Fields, is drilling at 4,987 feet in sandy shale and is through the first Wall Creek sand in the Frontier, which was approximately 100 feet thick and dry, and is on its way to the second sand in that series. It was not expected the first sand would be productive as the same horizon on the Midway Dome was dry and former tests on the Geary Dome had only small shows in that horizon. The Frontier was topped at 4,863 feet. The second Wall Creek is expected at around 5,275 feet. If the three Wall Creek sands are dry at Geary, the test will be drilled to the Dakota series.

Fremont County

Producers & Refiners Corp.'s No. 10, SW cor. SW, Section 14-32-95, Big Sand Draw structure, which last week was reported as having encountered heavy gas pressure in a sand heretofore undrilled on the dome, has been deepened from 4,217 to 4,262 feet after killing the gas. At the last named depth the core drill was working in bentonite and sand. No gauge has yet been taken of the gas in the new pay. It is supposed to be one of the upper members of the Dakota series.

The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is bottomed at 4,485 feet and is tubetracking pipe. The 6¼-inch is now at 4,282 feet. Lander Corp.'s No. 2, NW NE, Section 35-33-99, Bartram Dome, is drilling below 800 feet.

Niobrara County

An interesting shallow test is scheduled to be drilled by the Phillips Petroleum Co. this spring on the Middle Creek Dome, 7 miles north of Manville and 10 miles south of the Lance Creek Field. This test will be located on Section 5-33-66, and is due to get under way by April 1. R. G. Taylor and Shoup Brothers acquired the block from A. A. Spaugh and made a deal with the Phillips company to drill the test which will be put down with a core drill and which is expected to reach the Sundance at 850 feet. The Sundance recently was proven at 3,731 feet in a well drilled in Lance Creek by Ohio Oil Co. The Dakota is at the surface at Middle Creek. The structure is cut by a fault, which usually is considered a favaroble factor in Wyoming geology. The test was recommended by C. E. Johnson, geologist, of Denver. The firm of Shoup Brothers is composed of Verner R. Shoup and O. H. Shoup, Jr., sons of O. H. Shoup, former president of Midwest Oil Co. and former governor of Colorado. This structure is to the northeast of the Shawnee Dome in Converse County which is to be drilled this spring by Phillips Petroleum Co.

Converse County

Ohio Oil Co.'s No. 5 Jones, Section 9-33-76, Big Muddy, which is being deepened to horizons below the first Frontier, is drilling at 3,855 feet.

Big Horn County

Ohio Oil Co.'s No. 1 Smith, Lot 61, Section 33-56-97, Garland Dome, is drilling at 750 feet. Utah Southern Oil Co. is planning to start a well to the Madison lime on this structure at an early date.

Washakie County

Ohio Oil Co. is drilling a water well for its No. 1 Strothers, Lot 14, Section 19-45-92, Neiber Dome, which will be drilled to a depth of 7,000 feet or more. Camp, road and bridges are being constructed.

Park County

Resolute Oil Co.'s No. 1, NE SW NE, Section 17-57-101, Badger Basin, is shut down at 8,275 feet with the tools still in the hole after attempting a sidetracking job. The hole, which is in the first Frontier, is making about 2,000,000 feet of gas and slops over with oil when the tools are withdrawn. Midwest Refining Co.'s No. 31 Rosenberg, SW cor. SE, Section 24-58-98, Frannie Dome, is drilling at 3,860 feet in the red beds.

Natrona County

Wyoming Associated Oil Co.'s No. 26-SD-3, NW, Section 26-40-79, Salt Creek, is rigging up cable tools to complete. The depth is 2,900 feet. Golden West Oil Co.'s No. 1 State, Section 36-36-81, Segment Basin, which was reported last November to have suspended at 1,115 feet, has resumed and is drilling at 1,242 feet. Summitt Oil Co.'s No. 1 Trevett, NW NW, Section 21-33-80, North Platte, is drilling at 1,100 feet.

Rocky Mountain Production

Average daily runs from fields week ending January 24:

WYOMING	
Salt Creek	26,540
Big Muddy	1,920
Grass Creek	2,040
Elk Basin	670
Dallas	380
Frannie	850
Hudson	250
Lovell	10
Teapot	21
Warm Springs	90
Rock River	2,160
Lance Creek	160
LaBarge	1,550
Poison Spider	250
Oregon Basin	2,900
Osage	1,200
Ferris	40
Byron	10
Lost Soldier	3,180
Simpson Ridge	3
Dutton Creek	110
Midway	60
Total Wyoming	44,470
MONTANA	
Cat Creek	1,130
Lake Basin	50
Kevin-Sunburst	4,470
Pondera	1,210
Border	500
Dry Creek	420
Total Montana	7,780
COLORADO	
Florence	520
Moffat	940
Fort Collins	1,160
Iles Dome	986
Rangley	50
Tow Creek	390
Boulder	...
Orchard	150
Total Colorado	4,190
NEW MEXICO	
Rattlesnake	1,034
Hogback	420
Table Mesa	72
Artesia	629
Cap Rock	715
Getty	150
Hobbs	31,790
Jal	1,285
Lea	3,640
Eunice	2,455
Texas Pacific area	250
Total New Mexico	42,420
Total Rocky Mountain	98,860
Total previous week	98,168
Difference	692

MONTANA

The B. & H. Oil Co., drilling a wildcat in Glacier County, Section 23-34-6, about 6 miles north of the Drumheller gas well near Cut Bank, appears to have discovered a new oil field, the well showing for a commercial producer. The pay was found in this well at 2,760 feet and the oil is a grade similar to that of the Sunburst crude. It is an asphaltic base and was found with a gas flow. As soon as the bit entered the sand, gas commenced to show and the oil came up in the bailer. Drilling was stopped and it is reported the bit is just 15 inches into the sand. Further drilling will be done when the well has tankage and a control head placed.

This area north of Cut Bank has had several wells drilled in the past year and so far only gas has been found. The Drumheller well, which was the first gas well to be drilled, is now being used to furnish gas to Cut Bank, the nearest railroad point for the district. Several other wells found gas, but the B. & H. well is the first to find oil.

In the Sunburst Field, the Arronow well on Section 14-35-2, reached the Ellis sand the past week and found a production of 15 bbls. Only one other well is active in Sunburst, the Nepstad Oil Co.'s No. 5 on Section 27-35-1, which has started spudding.

GASOLINE AND LUBS BY HYDROGENATION

(Continued from Page 34)

the extent of dewaxing. Without excessive finishing the hydrogenated oils are of a high color. The Conradson carbon-residue is always low, often lower than any existing oils of equal viscosity and always lower than existing oils of equal viscosity and paraffinic nature. As mentioned earlier the hydrogenation process removes sulphur and oxygen, thus giving these products a low sulphur and organic acidity content. The changes in viscosity with a change in temperature as measured by the viscosity index is very good and where desired may be made equal to the best. The term "viscosity index" used in these tables was devised by Dean and Davis[2] and indicates the viscosity-temperature characteristics of the lubricating oil. For example, paraffinic oils such as Pennsylvania have a viscosity index of about 100, and coastal oils a viscosity index of from 0 to 20. Thus, from the ordinary laboratory inspection, satisfactory performance could be expected for the hydrogenated oils. Two series of tests reported below show that this expectation was completely borne out.

White Motor Tests

The White motor-truck engine tests were made on the Model GRB which has four cylinders of 4¼"x5¾" and was equipped with an OE-2 Stromberg carburetor and a ZR-4 Robert Bosch magneto. Engine power was measured with an electric cradle dynamometer; gasoline consumption, by laboratory burette apparatus; temperatures of air, water, oil, crankcase, fuel and air-fuel mixture, by thermocouples and thermometers; exhaust-gas analyses, by a bubble-type Orsat; spark advance, by a neon-tube indicator; oil level, by a special laboratory type level gauge; speed, both by a Hasler tachometer and by a positive revolution counter and stopwatch; intake-manifold depression and exhaust back pressure, by special manometers; and air condition, by barometer and hygrometer. A special throttle-setting device was used to insure positive settings. Carburetor-air temperatures were held at 100° F. plus or minus 2 degrees with an automatic electric heater, while outlet-water temperatures were also controlled automatically at 185° F.

The engine was put in first-class condition by removing carbon deposits; grinding valves; washing down the crankcase, valve chambers and other parts; installing new spark plugs having an 0.025-inch gap, and setting the valve tappets with clearances of 0.008 and 0.010 inch. A charge of 20 pounds of oil to be tested was introduced into the crankcase, the oil-level gauge being calibrated at the same time. The engine was then started and brought rapidly to the following operating conditions: (a) three-quarter load at 1,400 r.p.m., (b) outlet water at 185° F., (c) carburetor air at 100° F., (d) 28-degree spark advance and (e) room temperature 70° F.

The test was run in 50 cycles of one hour, as follows:

1. Fifty minutes with conditions as above, data being taken at the 25 and 50-minute marks.

2. Ten minutes idling at 450 r.p.m. with a beam load of 25 pounds.

At the end of each test the crankcase was drained while hot, after which it was removed and the stray oil collected. The inside of the engine and the crankcase were then washed down with kerosene, after which the bearings and cylinder walls were sprayed with the next oil to be tested. The cylinder heads were removed, the carbon collected, valve gum removed and the valves then reground. The engine was then assembled and prepared for the next test.

The first and, thereafter, every third oil tested was a hydrogenated oil, identified as Hydrolube 75, which was used as the reference oil. The frequent runs on this oil served to give a truer comparison with the other oils tested by giving an index of the engine changes occurring as the tests progressed. The comparisons are made by referring the oils in question to the curve connecting the reference-oil points.

TABLE 4—RESULTS OF WHITE MOTOR TRUCK ENGINE TESTS

Oil	Oil consumption as compared with hydrolube per cent	Carbon in engine as compared with reference oil, per cent	Valve gum in excess of hydrolube reference oil, gm.
Hydrolube 75	100	100	0.0
M	112	160	1.3
N	108	151	0.9
O	105	160	0.5
P	120	146	0.9
Q	133	91	0.0

The interesting results of this series of tests are given in Table 4 and plotted in Figure 1. The carbon deposition of the combustion chamber and the oil consumption are given in terms of percentages either side of the Hydrolube reference line. The fact will be noticed that, as regards oil consumption, the Hydrolube was better than any of the other oils tested, these being representative of the best grades available today. The carbon deposited by the Hydrolube was less than that of any of the other oils except one of the coastal naphthenic type, which had a high oil consumption. The weight of gum deposited on the valves was lowest with the Hydrolube and the same coastal oil. These results indicate that, with a conventional low-speed engine which does not run excessive crankcase-oil temperatures, the Hydrolube on the whole showed an improvement over the natural oils. Its performance may be characterized as follows: consumption lower than the best paraffin-base Pennsylvania lubricants and carbon deposit in the engine comparable with that obtainable with coastal stocks. In general, the carbon deposit was proportional to Conradson carbon residue.

Because of the difficulty in satisfactorily lubricating heavy-duty, high-speed motorcoach engines, we decided to run a series of tests under abnormally severe conditions on a 3¾"x5" six-cylinder engine of this type. To makes these tests as severe as desired the engine was placed in a room maintained at a constant temperature of 100° F.; the fan was removed from the engine to eliminate this upper crankcase cooling; no cooling provision was made for the oil in the lower crankcase; and to aggravate both oil consumption and carbon formation the lower of the two oil rings on the piston was removed.

The auxiliary apparatus was practically the same as for the White motor-truck engine tests previously described except that the conditions of operation were altered to the following schedule: (a) Three-quarter throttle, the setting made by horsepower readings at 1,600 r.p.m.; (b) outlet-water temperature 185° F.; (c) spark advance 24 degrees; (d) carburetor-air temperature 100° F., and (e) room temperature 100° F.

The speed cycles were as follows:

1. Seven hours at 1,200 r.p.m.
2. Eight hours at 1,600 r.p.m.

(Continued on Next Page)

[2]See Metallurgical and Chemical Engineering, October, 1929, p. 618.

3. Seven hours at 1,400 r.p.m.
4. Eight hours at 1,600 r.p.m.
5. Seven hours at 1,800 r.p.m.
6. Thirteen hours at 1,600 r.p.m.

Each hour of the above speed cycles was run for 50 minutes at the given speed followed by 10 minutes idling at 400 r.p.m. with a beam load of 10 pounds.

As in the White motor-truck engine tests the first oil and every second or third oil thereafter was a hydrogenated oil, designated as Hydrolube 62 and made from Colombian crude. All comparisons between oils are made by reference to their position to the base line connecting the reference-oil points. In this way engine changes between tests are compensated.

Results

Table 5 shows oil consumption, carbon formation within the engine and gum formation on the inlet valves. Figure 2 shows these same results plotted. The two hydrogenated products show performance characteristics superior in all respects to those of the other oils tested.

These last tests taken in connection with the tests on the White motor-truck engine indicate the superiority of the hydrogenated products both for conditions of moderate and severe service. In the Mack motor-truck engine tests, where conditions were exceptionally severe, the only oils tried other than the Hydrolubes were those known to be of the highest quality, since oils of lower quality under these conditions would have shown excessive consumption. A noteworthy feature, therefore, is that, under these extreme conditions and in comparison with high-grade natural products, not only did the low oil consumption of the Hydrolubes show up to better advantage than under the more moderate operating conditions in the White motor-truck engine tests but also that the condition of the engine with the hydrogenated products, as shown by carbon formation, gum on inlet valves, wear and general inspection, was the better.

Hydrogenated Gasolines

A recent estimate of gasolines marketed throughout the nation plotted on the basis of knock rating against percentage sold is shown in Figure 3. This same information is given in Table 6. This clearly illustrates why the development of higher efficiency, higher compression automotive equipment has been so much delayed. Hydrogenated gasolines have been made with a knock rating up to 95 octane number

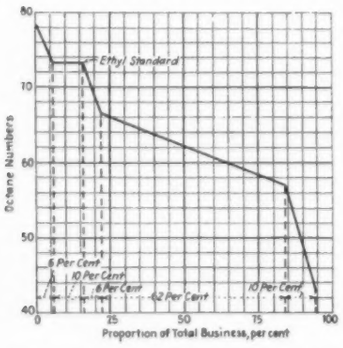


Figure 3—Survey of gasoline sales in the United States on the knock-rating basis.

and with blending characteristics as good as chemically pure benzol. Figure 4 shows the effect of blending various percentages of hydrogenated gasolines of 83.2, 87.7 and 90.4 octane numbers into three fuels of 50, 60 and 66.5 octane numbers respectively, and the results of blending motor benzol into the same fuels are also plotted. The properties of these blending stocks are given in Table 7.

Another characteristic of these hydrogenated fuels and one which is radically different from that of the cracked naphthas is that the heavier fractions have the best antiknock qualities. A graph showing the octane numbers plotted against various distillation points of a typical cracked stock and of a hydrogenated fuel is reproduced as Figure 5. The Otto-cycle, air-cooled aviation engine has the advantage of very light weight per horsepower

TABLE 8—OCTANE NUMBERS OF VARIOUS AVIATION GASOLINES

Stock—	Octane No. 212° F.	Octane No. 300° F.	Lead required to equal 87 octane No., cc. 212° F.	Lead required to equal 87 octane No., cc. 300° F.	Octane No. change per cc. of lead at 300° F.
Straightrun California	76	76	1.6	1.5	7.3
90 per cent of straightrun California and 10 per cent of benzol	79	75	1.1	1.2	10 0
Straightrun Smackover	74	72	2.7	3.8	4.0
Vapor-phase cracked Texas	75	73	3.6	4.2	3.3
Hydrogenated Aviation A	80.4	79	0.7	0.9	9.0
Hydrogenated Aviation B	74.8	73.5	1.1	1.7	8.0

TRUCK ENGINE TESTS

Oil	Oil consumption as compared with hydrolube per cent	Carbon in engine as compared with reference oil, per cent	Valve gum in excess of hydrolube reference oil, gm.
Hydrolube C	100	100	0 0
Hydrolube M	75	98	0.0
A	145	137	0.3
B	106	136	3.4
C	105	105	2 2
D	167	117	1 4

TABLE 6—ESTIMATED SALES IN THE UNITED STATES OF GASOLINE OF VARIOUS ANTIKNOCK VALUES

Sales, per cent	Antiknock value, octane No.
6	Below 43
10	43 to 57
62	57 to 66
6	66 to 73
10	73 (Ethyl standard)
6	Above 73

TABLE 7—PROPERTIES OF HYDROGENATED ANTIKNOCK GASOLINES USED AS BLENDING STOCK

Gravity, °A.P.I.	45 1	47 2	45 7
Initial distillation point, °F.	92	95	106
Percentage distilled at			
140° F.	14.0	12.0	..
158° F.	20 0	18.0	9 0
212° F.	34.0	36 0	26 0
284° F.	51.0	58.0	55.0
356° F.	73 5	78 0	90.0
90 per cent point, °F.	384	384	356
Endpoint, °F.	410	422	406
Recovery, per cent	99 0	99 0	99 0
Octane No.	82 8	88 0	90.0
Dissolved gum, gm.	19.6	3 9	5.2
Induction period, hour	2.0	1.1	1.6
Color (Robinson)	23	22	23
Sulphur, per cent	0 017	0 016	0.020

delivered, with the disadvantage of using a very volatile fuel of very low flashpoint.

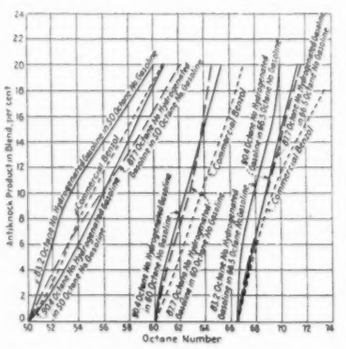


Figure 4—Effect of blending various percentages of hydrogenated gasolines of octane numbers 83.2, 87.7 and 90.4 and commercial motor benzol into fuels having octane numbers of 50, 60 and 66.5.

The Diesel-cycle engine has a greater weight per horsepower but a safety advantage in that a high-flashpoint fuel is used. For positive fuel injection and atomization an Otto-cycle engine cannot advantageously use present nonvolatile fuels because of their severe detonating characteristics. Hydrogenation gives a high-flash fuel of extremely good antiknock value, making possible future developments of this nature, particularly in the airplane and marine fields.

Hydrogenated gasolines are also very sensitive to the addition of tetraethyl lead. Table 8 gives the octane numbers at 212° and 300° F. of several aviation gasolines made by different processes. The quantity of tetraethyl lead required at both 212° and 300° F. to bring these fuels to the Army Air Corps specification of 87 octane number is also given.

Hydrogenated fuels have characteristically low sulphur contents, the average being less than 0.03 per cent. Much controversy has arisen concerning sulphur in gasolines. Most of this experimental work has been limited to a study of engine corrosion. Insufficient results have, as yet, been reported on the effect of sulphur content on carbon deposition, of lead-sulphate deposition on exhaust valves when tetraethyl lead is used and on the gum formation in intake manifolds and on intake valves.

The properties of the blending stocks given in Table 7 show the hydrogenated fuels to have low gum content and also by the oxygen-bomb test to be very stable.

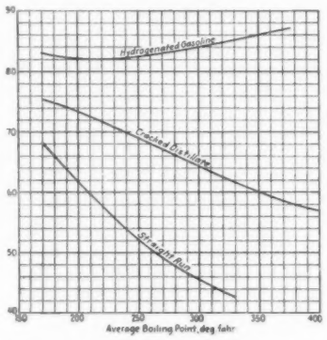


Figure 5—Antiknock characteristics of hydrogenated gasoline, straightrun gasoline and cracked distillate plotted as a function of the boiling range.

This bomb test consists in placing a small quantity of fuel in a gas-tight steel bomb and subjecting it to 100-pound pressure of oxygen. After testing the bomb for leakage it is coupled to a pressure-recording gauge and placed in a steam bath. The time from maximum pressure until a drop of 5 pounds occurs is called the induction period and is a measure of the fuel's stability. A fuel that will stand up 1½ hours under this test is exceptionally stable.

Summary

The tests here referred to show that hydrogenated lubricating oils made from available common crudes are superior to the highest grade of natural lubricants now available to the automotive industry.

High-grade naphthenic gasolines and blending stocks are produced by hydrogenation from relatively low-grade gas oils, these highly antiknock blending stocks having iso-octane numbers of from 90 to 95 and a blending value in commercial gasoline equal to pure benzol. They are low in gum and sulphur and are gum and color stable. They are excellent stocks for use with tetraethyl lead, since the lead susceptibility is good, being considerably better than for most cracked products.

The process of hydrogenation, when widely adopted by the petroleum industry, apparently will open up to the automotive engineer the possibility of designing engines for operating at greater compressions, higher speeds and higher temperatures, resulting in a marked gain in efficiency.

SIGNIFICANCE OF NEW SPECIFICATIONS

(Continued from Page 68)

tility and vapor pressure specifications to seasonal demand will immediately recognize the usefulness of the new natural gasoline specifications in permitting the inclusion of high gallonages of low vapor pressure natural gasolines in special high volatile fuels in winter time and effective control of finished vapor pressure in summer time fuels. Data are available in the literature which make it possible for any refiner or user of natural gasoline to accurately prophesy distillation points of the finished blend of any percentage of natural gasoline with any percentage of refinery blending stocks. Market prices such as obtain at present are conducive to the use of high gallonages of natural gasoline which high gallonages, however, have been impossible with the old specifications, due to the fact that vapor pressures of natural gasolines were not accurately controlled.

The new specifications are an alternate specification with the old specifications through the year 1931 and it will be advisable for users of natural gasoline to buy gasoline under the new specifications so that when they do ultimately, as of January 1, 1932, become the sole specification, there will be no difficulty in handling of purchase and sales contracts due to failure of buyer or seller to become familiar with these new specifications.

PLAN GASOLINE LINES ALONG THE EAST COAST

(Continued from Page 35)

canal at Albany, or other points, to reach into up-state and New England markets.

Philadelphia is already the starting point for one gasoline pipe line, that of the Sun Oil Co., but Atlantic Refining, Crew-Levick, Gulf, Pure, Shell Eastern, Sinclair, The Texas Company and Vacuum Oil Co. also sell in the bulk oil market at that point and a pipe line reaching into contiguous territory by one or more of this group is not out of the question.

New England Lines

Portland, Me., is another important bulk terminal point on the Atlantic Seaboard which is coming in for consideration as the possible starting point for one or more gasoline pipe lines to reach into the territory served from that point. The principal companies selling in the bulk market at Portland are Atlantic Refining, Colonial-Beacon (Standard Oil Co. of New Jersey), Cities Service Refining, Gulf, Pan American, Shell Eastern, The Texas Company and Standard Oil Co. of New York.

The Providence district, from whence the new Socony gasoline pipe line will start, also houses bulk marine terminals operated by a number of other large companies, including Atlantic Refining, Colonial-Beacon, Gulf, Pan American, Shell Eastern, Sinclair, Sun, The Texas Company and Tide Water. It is not regarded as improbable that one or more of these companies may deem it advisable to meet the new competitive threat of Socony by construction of their own pipe line distributing systems for gasoline marketing to principal territories served.

Baltimore is also regarded as another logical port from whence one or more gasoline pipe lines to interior markets may reasonably be expected. Most of the large integrated companies operating in the East have terminals at Baltimore, among them being Tide Water, The Texas Company, Atlantic Refining, Continental Oil, Gulf, Richfield, Shell Eastern and Standard Oil Co. of New Jersey.

Other Key Points

Other key points for gasoline distribution along the Atlantic Seaboard are as follows:

Tampa, Fla., where Sinclair, Pan American and Gulf operate bulk terminals.

Portsmouth, N. H., where Atlantic Refining, Gulf, Pan American, Pure, Richfield, Sinclair, Standard Oil Co. of New Jersey and The Texas Company have bulk plants.

Jacksonville, Fla., where bulk terminals are operated by Atlantic Refining, Gulf, Pan American, Pure Oil, Richfield and Sinclair.

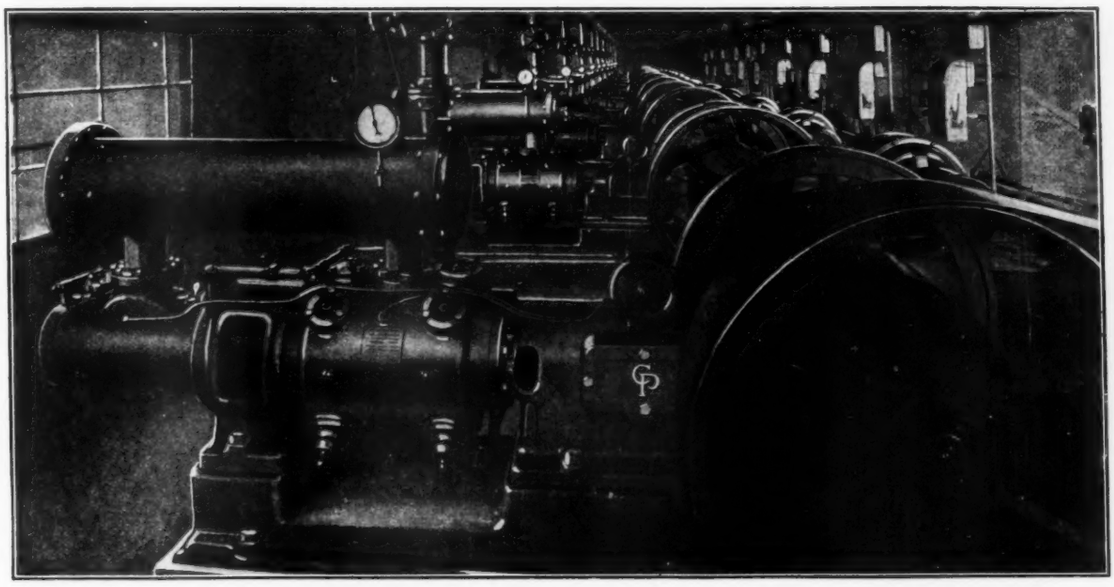
Wilmington, N. C., where The Texas Company, Pan American and Atlantic Refining operate bulk terminals.

Savannah, Ga., where Atlantic Refining, Gulf and Pure Oil have bulk plants.

Brunswick, Ga., where Atlantic Refining has a bulk terminal.

Charleston, S. C., where Standard Oil Co. of New Jersey, Atlantic Refining, Gulf, Sinclair and The Texas Company have bulk plants.

Boston ranks high among the important distributing points for gasoline and other products in East Coast territory, and the possibility of one or more gasoline pipe lines from that port inland is believed to be under consideration by companies ac-



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tive in that territory. A number of the major companies operating in the East are represented by important bulk marine installations at Boston, among them being the Atlantic Refining Co., Cities Service Refining Co., Colonial-Beacon, Pan American and Standard Oil Co. of New York.

More Flexible

While actual figures on operating costs of gasoline pipe lines are not available, it is known that distribution of motor fuel by this method offers many economies, with actual transportation costs figuring roughly between 50 and 60 per cent of the cost for shipments by tank car. In addition to the freight savings thus effected, gasoline movement by pipe line is much more flexible than by the older methods, and final delivery costs may be further reduced by shorter hauls to service stations by trucks from bulk plants advantageously located along the route of such lines.

While a number of other companies are closely studying Socony's projected Providence-Worcester gasoline line and several are reported seriously considering similar projects at their more important distributing ports, it is expected that final decision on further developments of this type will be withheld until more information is forthcoming on the question of regulation of such lines by the Interstate Commerce Commission. Railroad interests have demanded amendments to the Interstate Commerce Act to require the segregation of pipe lines from oil companies where such lines are used in interstate commerce, and the petroleum industry, through the American Petroleum Institute, is at present working on this situation.

Notwithstanding the final decision in this matter of federal regulation for gasoline and other oil pipe lines, however, it is believed the prospect of a network of gasoline pipe lines knitting together principal East Coast distributing points with marine bulk terminals at principal ports is much less visionary than some members of the trade seem inclined to believe.

EAST CENTRAL TEXAS

(Continued from Page 61)

casing. This is probably the most important test in the field at present, as it is believed the sand is thickening in this direction, and all wells in this area will be large ones, as was the Ashby well.

Haynes Drilling Co.'s No. 1 J. T. Brown in the M. J. Pru Survey, approximately 4,000 feet southwest of the Ashby well, is another test being closely watched since it cored saturated sand from 3,662-67 feet and set 6⅝-inch casing at 3,650 feet. Total depth is 3,667 feet.

Another test, 2½ miles north of the Joiner Pool, cored lime at 3,579 feet. This is Lewis and others' No. 1 Oscar Jones, an important test due to the fact that it is believed to be off the east flank of production, and will be dry. If it proves a producer it will rout another theory on the area, and open up an untold amount of acreage in that direction. Elevation of the test is 495 feet.

New Locations

Four more locations were announced in Rusk County this week, several other locations being reported but not carrying footage, consequently they could not be entered on the location report. Every week new ones will be made, and the two separate areas in Rusk County and the newly discovered pool in Gregg County will be extremely difficult to keep up with due to so many locations being made, and the consequent completion of the many tests. Scouts and land men who have watched pools developed in states where section, townships and ranges made a pattern out of the pools will have serious work trying to spot the new locations on their maps, and keep the various drilling wells in mind in these new areas. It will be nothing short of a nightmare to all watching drilling progress.

East Central Texas was also the chief topic in Austin on January 22 when the proration committees and representatives of companies and independent operators met with the Railroad Commission to discuss statewide proration for another two months. The central proration committee recommended that the Van Pool, Van Zandt County, be allowed 30,000 bbls. during February and 35,000 bbls. during March. Judge Elkins of the Pure Oil Co. objected to this allowance unless the company received assurance that the allowable would be increased still further after April 1, the company desiring a total of 50,000 bbls. per day. The Pure Oil Co. previously stated it had a market for the latter amount. This question of increase was to be discussed later by the central committee and the Railroad Commission adopted recommendation for increase in February and March. The East Central Texas situation will be taken up later also after a special meeting is held at Longview this week.

There are now 195 wells producing in the Van Pool with a potential of 382,502 bbls. through eleven-sixteenths-inch choke, the daily allowable now standing at 27,500 bbls., of which the Pure-Van Pipe Line Co. takes 17,500 bbls. per day and the Humble Pipe Line Co. takes 10,000 bbls. per day.

Henderson was first chosen as the site for supply stores for the Joiner Pool, but due to the Bateman test near Kilgore making a well, and the test on the Lathrop farm northwest of Longview looking good for a producer, some stores have been moved into Kilgore, which is practically midway between the Lathrop and Joiner areas on hard-surfaced roads, and is only 3½ miles from the Bateman area. It is also on the main line of the I.&G.N. Railroad, which makes it better located for supply houses.

COMPLETIONS IN EAST CENTRAL TEXAS

Fannin County

E. M. Rogers' No. 1 McSwain, dry and abandoned, total depth 1,500 feet.

Smith County

Owen & Sloan Oil Co.'s No. 1 Starnes, dry and abandoned, total depth 4,235 feet.

Van Zandt County

Humble Oil & Refining Co.'s No. 2 L. V. Freeman, initial production 134 bbls., total depth 2,946 feet.

The Pure Oil Co.'s No. 1 R. A. Enas, location abandoned.

SEVERAL REFINERIES IN OKLAHOMA CITY

(Continued from Page 38)

ply is in immediate prospect, officers said. Don Crump is president; Don Mawhead, vice president; W. L. Beavers, secretary and treasurer; W. D. King, refinery superintendent; T. L. Ray, chief chemist; and E. van Bogaert, sales manager.

The Century Petroleum Co. plant is the newest one in the field. It is of the skimming type and has a daily capacity of 2,500 bbls. The plant was constructed by the Amarillo Producers & Refiners Corp., and turned over to the Century company. It is not now operating because the five wells from which it is to be supplied are at present overproduced and shut down for proration. The producers range in size of from 12,000 bbls. daily to 81,000 bbls. and the aggregate potential is rated at between 150,000 to 200,000 bbls.

Officers of the Century company are: Roy S. Randerson, president and treasurer; Mathew Nelson, of Tulsa, vice president; Senator Rollo W. Coleman, of Kansas City, Mo., vice president; L. B. Randerson, of Oklahoma City, secretary; M. D. Kinsey, assistant to the president; and J. D. Wrather, refinery superintendent. Frank Blackwood is pipe line superintendent. Mr. Wrather is president, treasurer and general manager of the Amarillo Producers & Refiners Corp.; P. H. Hertzog is vice president and sales manager; and W. S. Roberts is secretary. It is understood that a new subsidiary will be formed to operate the refinery.

WITH OKMULGEE COMPANY

In the January 22 issue of The Oil and Gas Journal in an item announcing the death of C. A. (Granny) Lewis, it was mentioned he had been connected with the Central-Commercial Oil Co. of Tulsa. This was an error. Mr. Lewis had been associated with the Central-National Oil Co. of Okmulgee, Okla.

ALLOWABLE PRODUCTION IN TEXAS REDUCED BY NEW STATE ORDER

AUSTIN, Tex., Jan. 26.—The State Railroad Commission oil and gas division has approved a reduction of the State's allowable crude oil production to 640,253 bbls. daily, effective January 25 to April 1. The new order says:

It appearing that the Legislature has forbidden comprehensively the production of crude oil or petroleum "in such manner and under such conditions as to constitute waste" and the duty is placed upon the Railroad Commission of Texas to "do all things necessary for the conservation of oil" and to "establish such rules and regulations as will be necessary to conserve the oil and gas resources in the State and to prevent waste thereof; and

It further appearing that in certain fields and districts of this State there is a lack of uniformity in the use of the gas energy (often called disproportionate withdrawals of oil) in localized areas due to the fact that some properties are being produced without restriction, while other properties are produced under varying degrees of curtailment, due to the inability of the owners of the latter to find a market for their production; that such lack of uniformity in the use of gas energy and especially the producing of some wells to capacity results: In the dissipation of gas energy; the actual physical waste of gas; and the rapid and undue encroachment of water; all with resulting reduction in the ultimate quantity of oil which can be produced from the fields and districts involved, and the actual physical loss and waste, for all useful purposes, of that which cannot be recovered, due to the existence of the conditions named; and

It appearing further that, unless restrictions be uniformly applied in a given pool or fields, waste of oil and gas will necessarily result from the conditions above set forth, and will also result from the fact that certain producers, who have no market for their products, will be compelled to store same and thus create unnecessary fire hazard and increase losses through evaporation; and

It further appearing that the potential production of oil in the State of Texas is greatly in excess of the total market demand for oil and its products, and that, unless the production of oil in this State is curtailed to the amount of the market demand for oil and its products, it will be necessary to store all oil produced in excess of the amount for which there exists a market demand, and that such storage will result in actual physical waste of tremendous quantities of oil through evaporation, and in the creation of unnecessary fire hazards, endangering the oil so placed in storage, and through leakage or other losses that may occur from such aboveground storage; and

Aggregate Demand

It further appearing that a careful field by field and district by district check or canvas has been made of the demand for the purchase and use of crude petroleum within this State, by securing from the purchasers of oil in this State nominations of the quantities which they will desire to purchase over the period beginning January 23, 1931, and ending April 1, 1931, and by determining the actual demand for purchase and use by others in this State who are purchasing and using crude petroleum, but who failed to make nominations for such period, the results of such check or canvas having been duly presented in evidence before the Railroad Commission of Texas at said hearing on January 22, 1931, and, from which results, it appears that the demand for purchase and use of crude petroleum for the fields and areas embraced in the several producing districts hereinafter set forth is the amount hereinafter set forth under and in connection with the districts named, and that the aggregate of such demand for purchase and use of crude petroleum in this State for the period beginning January 23, 1931, and ending April 1, 1931, is 644,253 bbls., subject to the later provisions hereof; and

It appearing that, if the production be limited in each district to the amount as authorized herein, and in the manner provided in the special orders applicable thereto, waste of oil and gas and gas energy will be prevented or at least minimized; and

It further appearing that the demand for purchase and use of crude petroleum in certain of said districts may be increased or decreased during particular periods of time designated as proration periods in such orders affecting special fields or districts, and that such fact may be ascertained by the Railroad Commission of Texas through its agents and employes, and by hearings duly held; and

It further appearing that it is essential to the prevention of waste and the conservation of oil and gas in particular fields of this State that restriction upon production should be uniformly applied within the various fields, and that the production and consequent outlet to market should be a fair and ratable basis, and that the purchase of oil by any purchasers taking oil from particular fields or districts should be upon a fair and ratable basis, and that necessary arrangements should be made by purchasers and transporters of oil, working in co-operation with the Railroad Commission of Texas and its agents and employes and the various advisory committees or the executive committees of such advisory committees, created in the several fields or districts, with a view of securing such fair and ratatble taking; and

Allowable Production

It further appearing that the restriction of the production in the various districts to the amounts set out below, if made uniform in each field, in view of the potential capacities of the wells, will prevent, or at least minimize, the waste of oil and gas and of gas energy, and will also reduce the production so that it will equal the market demands.

Now, therefore, it is hereby ordered by the Railroad Commission of Texas as follows:

That subject to the later provisions hereof and except as hereinafter modified by the Railroad Commission of Texas, not more than 644,253 bbls. of oil shall be produced on any given day within the State of Texas during the period beginning January 23, 1931, and ending April 1, 1931, both at 7 o'clock a.m.; that during said period the daily production of oil from the various fields and districts in this State shall be limited to the following specified amounts:

Panhandle: (Including Gray, Hutchinson, Moore, Potter, Carson and Wheeler Counties), 40,000 bbls.

North Central Texas: (Including Archer, Baylor, Clay, Cooke, Foard, Montague, Wichita and Wilbarger Counties, and all of Young County north of an east and west line drawn through the town of New Castle, 5,749 bbls. being allotted to New Castle area), 58,144 bbls.

West Central Texas: (Including Brown, Callahan, Comanche, Coleman, Eastland, Erath, Jack, Palo Pinto, Shackelford, Stephens, Throckmorton, Haskell, Runnels and south Young Counties, being all of Young County except the north Young subdistrict), 25,000 bbls.

West Texas: (Including Andrews, Crane, Crockett, Ector, Fisher, Glasscock, Howard, Irion, Jones, Loving, Mitchell, Nolan, Pecos, Reagan, Scurry, Taylor, Upton, Ward and Winkler Counties) . . . 245,927 bbls. . . . (The allotment for this district is placed at 245,927 bbls. based upon an allowable production of 12,000 bbls. per day from the Big Lake Field in Reagan County, which represents the approximate daily production from the shallow pay horizon in said field. The commission has in contemplation that the production from the deep pay horizon in said field will soon be reduced by the operation of methods to be placed in effect. The allowable for the West Texas district will be increased by the difference between the allowable production to be established by the commission for said field in a special order covering same and said 12,000 bbls.)

East Texas Allotment

East Texas: (Including Anderson, Rusk, Gregg, Cherokee, Navarro, Freestone, Limestone and Van Zandt Counties) . . . 38,735 bbls. . . . (The amount allotted for this district is placed at 38,735 bbls., subject, however, to an increase in the total for the district by any amount that may be allotted by the Railroad Commission of Texas to the fields in Rusk and Gregg Counties, after special hearings with reference thereto, and subject to an increase in the daily allowable production of Van Field to 30,000 bbls. during the month of February, 1931, and a further increase to 35,000 bbls. during the month of March, 1931.)

Southwest Texas: (Including Bexar, Caldwell, Atascosa, Guadalupe, Bastrop, Williamson, Milam, Medina, Live Oak, McMullen, Webb, Duval, Jim Hogg and Zapata Counties) . . . 77,447 bbls. . . . (The amount allotted to this district includes 30,000 bbls. allotment to the Darst Creek Field in Guadalupe County, in accordance with special order heretofore issued by the Railroad Commission of Texas covering said field.)

Gulf Coast district: (Including Orange, Jefferson, Hardin, Liberty, Chambers, Galveston, Harris, Washington, Austin, Fort Bend, Brazoria, Wharton, Matagorda, Refugio, Kleburg, Nueces, San Patricio and Bee Counties), 155,000 bbls.

Special orders now in effect covering particular fields and particular districts in this State shall remain in effect, and it is contemplated that further special orders may be entered applying to other particular fields and districts and designed to meet special conditions existing or arising in such fields and districts. In this connection, efforts are being made by the producers and the Central Proration Committee of the producers to secure an additional demand for oil in the Panhandle, North Central Texas and West Central Texas districts, and it is to be understood that if such demand is secured the allowable production for said districts will be increased by the amount of the additional demand so secured and no more, and further that such conditions shall be taken care of in the special orders that may be entered covering said districts. It is further ordered that the special orders now in effect covering the Sugarland Field in Fort Bend County and Raccoon Bend in Austin County shall be continued in effect except that the allowable production for the former shall be fixed at 12,400 bbls. per day, and the allowable production for the latter shall be fixed at 10,000 bbls. per day.

Operators' Recommendations

The recommendation of the central proration committee, headed by R. R. Penn, Dallas independent oil operator, and consisting of representatives of both the independents and the major companies was as follows:

Panhandle district, production as of January 17, 57,450 bbls.; allowable recommended 40,000; North Texas, present production 60,350, recommended 57,245; Central West Texas, production 25,500, recommended 24,000; West Texas production 246,650, recommended 245,927; East Central Texas production 43,150, recommended 43,735; Southwest Texas production 78,850, recommended 77,447; Gulf Coast production 163,000, recommended 155,000.

Mr. Penn said the demand for crude oil was around 670,000 bbls., substantially the same as during the life of the old order.

Mr. Penn said that at the beginning of proration the daily yield was 863,000 bbls. on August 15, the peak of the demand. After that came the decline in demand and proration has tended to reduce the consequent wastage of oil and gas through evaporation, inflow of water, ultimate oil loss and collapse of the price structure. He said the University of Texas is the largest royalty owner in the West and that it should be vitally concerned over the large wastage of gas and ultimate loss of oil and that all Texas is affected because the oil industry brings countless millions to this State. The reduction by proration was an achievement of pride, Mr. Penn said, but that there still is an immense amount of oil in storage in the United States with a continuing slack demand, making proration necessary.

Reagan County Criticized

In discussing the Reagan County production on university lands, Mr. Penn said conservation has not been practiced there and that oil and gas still is being wasted, the gas going into the air and the oil into storage for evaporation and consequent ultimate oil loss beneath the surface. New wells have been brought in, he said, and production has not been curtailed, with no consequent reduction in the oil and gas ratio. He asserted that the university is losing thousands of dollars, and the gas should not be wasted but held underground until sold. "I think the commission without delay should stop the huge waste of gas and oil," said Mr. Penn, "for it is a grave situation demanding the best attention of the commission and the university."

Van Pool Allowable

Referring to Van, Mr. Penn said the Pure Oil Co. had asked an increase from the 27,500 daily allowance to 30,000 bbls. for February, 35,000 bbls. for March, 40,000 for April, 45,000 for May and 50,000 for June. The company said its market demands justified it. The committee, he said, did not feel it should recommend beyond April 1, the proration period, but agrees to the February and March increases. As a measure of justice and equity he said there probably would be no reason to oppose the increase as the increased gasoline demand starts in April, the opening of the touring season and farm work.

Unless the Rusk-Gregg County Field was promptly handled, the waste there would be as great as at Smackover, and the Powell Field, near Corsicana, Mr. Penn said. At Powell, he said, the daily production of 380,000 bbls. fell to 150,000 quickly because of the great gas loss and wells had to be placed on the pump whereas they should have produced for many years. "It was an immense waste of highly valuable natural resources," he continued, "and I fear the East Texas situation is just as alarming." He said it should be handled in advance to prevent large wastage, telling of a well with 8,000 bbls. capacity 9 miles from one of 20,000 capacity and another distant large producer now coming in, making the field 22 miles in length, "though it could be a sausage link affair of two or three nearby pools."

"Unless it is held to a reasonable and rational plan of production the losses will be greater than anything Texas has ever seen," predicted Mr. Penn, and added that East Texas has its place in the scheme of proration and is entitled to produce ratably. No recommendation was made by the committee for East Texas, he said, but regulations should be imposed. He said conferences with the East Texans were promising as they showed a spirit of co-operation.

Pure Oil's Position

Judge James A. Elkins of Houston, attorney for the Pure Oil Co., told of having 92 wells at Van when proration started with an allowable of 27,500 bbls. daily and of the requests for graduated increase 60 days ago, culminating with 50,000 bbls. February 15, but that the committee would not recommend it and a special promise on it had never materialized, with the result that no increase was given.

Mr. Penn interrupted to commend the Pure Oil Co. for its co-operation and said the increase for April would not hurt it, as the increased gasoline demand was then starting.

Mr. Elkins wanted 50,000 bbls. at once, saying the company has a market for it and none would become distress oil or go into storage. The wide open potential of 92 wells on August 15 was 1,000,000 bbls. The increase was to 194 wells and 2,775,000 daily potential on November 1, but no increase above the 27,500 daily allowable or less than 1 per cent, three times smaller than any other field ratio. "It is not right when there is an open market. We refused to pinch down some of the smaller fellows because it would ruin their wells."

Mr. Elkins said that on February 1

there will be 20 wells and on April 1 a total of 233 wells, an almost daily potential increase without a barrel of allowable increase. "It is wrong," he declared. "The average of 110 bbls. a well is unsound and unjust. We are producing with tubing and choke on all wells. There is so much back pressure on these wells that the gas escapage is large. It cannot be helped under present conditions. The commission should make a personal inspection and hold hearings on the ground to get the facts. We will pay their expenses in a visit to the field to learn the facts and I hope you will come. Wells are pinched to 137 bbls. daily, which in open flow would make 20,000 bbls. every 24 hours. That is an example of how we are being hit."

Feared Effect in Hobbs

Mr. Penn said the committee would not object to a hearing to increase the Van allowable and if the graduated plan presented was accepted the committee would have no objection to the 50,000 daily output. He said the committee had a reason for not recommending the increase at this time. Any publicity of giving Van more oil would be sure to bring a similar demand from the Hobbs, N. Mex., Field.

The East Texas representatives made a plea for the right to produce oil, which they said finds an instant market and where wells may be lost by being pinched too much. The law, they contended, contemplates equality between fields, but Van has only about half of what is allowed other fields on a potential basis.

Mr. Elkins said the proposed plan was satisfactory, if assurance could be had that the schedule of increases would be maintained until the 50,000-bbl. figure had been reached. "We already have a market for that much oil," he said.

Relief in Burkett Pool

The Arcadio Refining Co. and Clark & Cowden pleaded for relief in the Burkett Pool in Coleman County, describing wells which have come in and for which no pipe line connection has been made. This is in the west central district, where 12,000 bbls. is in isolated storage. They had refused to cut prices and bootleg, they said, and were ready to abide by proration. Pipe line company representatives present promised an investigation with the hope of giving relief. John M. Gholson of Ranger protested that any relief that would interfere with the daily 7,200-bbl. allowance of 5,000 wells cut 50 per cent to an average of 1½ bbls. a day. Any further reduction would mean ruin, he said.

PANHANDLE FIELDS

(Continued from Page 62)

feet. Beavers and others' No. 5 Belknap Cattle Co., top pay 654 feet, initial production 100 bbls., total depth 695 feet. Hamilton and Helm's No. 1 Russell & Co., dry and abandoned, total depth 700 feet. W. F. Hamilton's No. 4 Finch estate, top pay 654 feet, initial production 185 bbls., total depth 660 feet. C. B. Long's No. 2 Stowe, top pay 1,077 feet, initial production 35 bbls., total depth 1,079 feet. Riggs and Mollenkoph's No. 1 Remington, dry and abandoned 736 feet. Terrell, Watson and others' No. 1 Terrell estate, top pay 687 feet, initial production 25 bbls., total depth 690 feet. C. A. Stewart's No. 1 Davis, dry and abandoned, total depth 1,008 feet.

COMPLETIONS IN PANHANDLE DISTRICT

Carson County

Continental Oil Co.'s No. 1-M Burnett, top pay 3,125 feet, initial production 150 bbls., total depth 3,127 feet. Empire Gas & Fuel Oil Co.'s No. 1 Jordan and others, initial production 29,000,000 feet of gas from sand 2,325-2,464 feet, total depth 2,467 feet. Interstate Production Co.'s No. 1 McConnell, initial production 38,000,000 feet of gas from 2,395-2,590 feet, total depth 2,590 feet.

Gray County

Danciger Oil & Refining Co.'s No. 7 Morse, top pay 2,500 feet, shot with 250 quarts, initial production 514 bbls., total depth 2,580 feet. Nobob Oil Co.'s No. 3-A Morse, top pay 2,775 feet, initial production 50 bbls. oil and 2,000,000 feet of gas, total depth 2,900 feet. Cree and Hoover's No. 1 Cole, top pay 3,200 feet, shot with 90 quarts from 3,200-50 feet, initial production 192 bbls., total depth 3,253 feet. Magnolia Petroleum Co.'s No. 3 Heitholt, top pay 3,270 feet, initial production 75 bbls., total depth 3,302 feet. North American Oil & Gas Co.'s No. 1 Sullivan, initial production 24,000,000 feet of gas from 2,460-2,600 feet, total depth 2,640 feet. Wilcox-Pampa Oil & Gas Co.'s No. 34 Worley & Reynolds, top pay 3,000 feet, initial production 3,826 bbls., total depth 3,002 feet.

Moore County

Delmar Oil Co.'s No. 1-A Jones, total depth 3,460 feet, plugged back to 3,425 feet, shot from 3,370-95 feet, flowed 300 bbls. oil, 10 per cent water. Howe Gas Co.'s No. 1 Reeder, top pay 3,472 feet, initial production 50 bbls. oil and 10 bbls. of water, total depth 3,505 feet.

COMPLETIONS IN RANGER DISTRICT

Brown County

Outhier Oil Syndicate's No. 1 Dobney, temporarily abandoned, total depth 200 feet.

Callahan County

Star Drilling Co.'s No. 1 Finley, dry and abandoned, total depth 922 feet.

Comanche County

Chapin Oil Co.'s No. 1 Bryson, dry and abandoned, total depth 2,875 feet.

Eastland County

Harbin, Heflin and Lile's No. 1 Williamson, dry and abandoned, total depth 910 feet. Lone Star Gas Co.'s No. 1 Waters, shot with 100 quarts from 3,441-85 feet, initial production 1,273,000 feet of gas, total depth 3,487 feet.

Palo Pinto County

Alexander and others' No. 1 Edgen, temporarily abandoned, total depth 700 feet.

Shackelford County

V. Zeigler's No. 1 Dawson and others, temporarily abandoned, total depth 1,015 feet.

Stephens County

Arrowhead Oil Co.'s No. 1 Brown, total depth 2,230 feet, plugged back to 1,980 feet, gas sand at 1,825-1,865-1,905-1,940 feet, initial production 500,000 feet of gas with estimated 2 bbls. of oil.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 61)

RED RIVER COUNTY

Buffington et al's No. 1 L. H. Moore, 160 ft. from S and 160 ft. from W of 100 acres, Daniel Cornelius Sur. ..... Shut down 1,630 ft.

Droppleman and Bunely's No. 1 J. W. Cunningham, 250 ft. E and 250 ft. S of 180-ac. tract, S. B. Shi Sur. ..... Coring 2,326 ft.

Everett & Allen's No. 1 E. Howison, 225 ft. S. 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Derrick.

Everett & Allen's No. 1 Bryan, 1,200 ft. SW of NE cor. of Bryan 130 acres, P. Vaughn Sur. ..... Location

RUSK COUNTY

Alford et al's No. 1 W. L. Thrash, 1,103 ft. from N and 420 ft. from E of SE cor. of B. Smith Sur. ..... Derrick.

Akin & Rayzor's No. 1 Claude Ashby, 1,580 ft. E along N line of Ashby 119-ac. from NW cor., 600 ft. S at right angle to N line, Juan Ximenes Sur. ..... Drlg. 1,650 ft. (rotary).

Anderson & Co.'s No. 1 Frederick, 150 ft. out of SW cor. of 20-ac. lease out of 37.25-ac. lease ..... Drlg. 1,210 ft.

Anderson et al's No. 1 G. T. Moore, 600 ft. from E along S line of tract, Juan Ximenes Sur. ..... Derrick.

Anderson & Co.'s No. 1 Thompson, 150 ft. from N and 150 ft. from E, M. J. Prue Sur. ..... Location.

Universal Oil & Gas Mining Co.'s No. 1 J. T. Brown, 150 ft. from E and 150 ft. from S of N 36-ac. tract, M. J. Prue Sur. ..... Spudded and shut down.

Ball & Malone's No. 1 Bradford, 304 ft. W and 150 ft. N of excess strip off W side of Daisy Bradford 75-ac. lease ..... Rig up.

Bateman et al's No. 1 Lois Della Crim, 3,088 ft. W along N line of survey of NE cor. and 400 ft. S at right angles to N line of survey, E. G. Sevier Sur. ..... Shut down 3,642 ft.; shut in; little gas leaking through connection.

H. W. Blum's No. 1 W. M. Jarnigan, 150 ft. from S, 150 ft. W of 17-ac. tract, J. C. Snow Sur. ..... Derrick (rotary).

Burgoyne et al's No. 1 J. A. Alexander, 693 ft. from E and 400 ft. from S, Thomas Jones Sur. ..... Drlg. 2,760 ft.; top Pecan Gap 2,474 ft.

Burton Drlg. Co.'s No. 1 Clark (Florey), 172 ft. E and 2,282 ft. S of Peter Holmes Sur. ..... Derrick.

Consolidated Oil Co.'s No. 1 Camp, 150 ft. from S and 150 ft. W of 74.57-ac. tract, Juan Ximenes Sur. ..... Rig up.

Capp & Smith's No. 1 J. L. Cochrane, 150 ft. from E and 150 ft. from SE cor. of Cochrane tract, Jacob Roth Sur. ..... Preparing to spud.

E. L. Chapman's No. 1 A. P. Finney, 150 ft. from W of E 20 acres of 102-ac. tract, Isaac G. Parkey Sur. ..... Derrick.

Deep Rock Oil Co.'s No. 1 Mayfield-Alford, 150 ft. from W and 200 ft. of SE cor. of lease, Juan Ximenes Sur. ..... Oil sand 3,613-28 ft.; T. D. 3,628 ft.

Dan Dillon et al's No. 1 W. H. Frederick (Jake), 150 ft. from E and 150 ft. from S of 50-ac. tract, Juan Ximenes Sur. ..... Derrick.

East Texas Oil Co.'s No. 1 C. D. Ashby, 856 ft. N and 1,774 ft. from W of Ashby 119-ac. tract, Juan Ximenes Sur. ..... Set 12½ in. csg.; T. D. 200 ft.

Frank Foster's No. 1 Alford-Mayfield, 150 ft. N and 410 ft. from W of NE cor. of Ashby 45-ac. tract, J. Ximenes Sur. ..... Drlg. 3,572 ft.

Federated Oil Co.'s No. 1 Ben Lord, 150 ft. S and 1,221 ft. W of Laird 65-ac. tract, Isaac Ruddle Sur. ..... Derrick.

Foster Oil Co.'s No. 2 Cook, 150 ft. from S and 150 ft. from W, Juan Ximenes Sur. ..... Rig up.

Goodman's No. 1 Oscar Jones, 250 ft. from W and 150 ft. from N of railroad, Brown Sur. ..... Fishing 3,607 ft.

Haynes Drilling Co.'s No. 1 J. T. Brown, 150 ft. from N and 150 ft. from E of J. T. Brown 76-ac. tract, M. J. Prue Sur. ..... Cored oil sand 3,662-67 ft.; set 6⅝-in. csg. 3,650 ft.; T. D. 3,667 ft.

Heard's No. 1 Peterson, located in Robert E. Wynn Sur., 150 ft. out of NW cor. of Peterson 50 acres ..... Derrick.

Hunt's No. 2 Bradford, 1,320 ft. from E and 150 ft. from S of Blk. No. 12, Juan Ximenes Sur. ..... Drlg. 2,920 ft.

H. L. Hunt's No. 1 Claude Ashby, 330 ft. from W and 485 ft. S of NE cor. of Ashby 109.7-ac. tract, J. Ximenes Sur. ..... Oil sand 3,517-33, 3,536-39, 3,545-58 ft.; flowed 209 bbls. first 5 hrs.; T. D. 3,575 ft.

Hunt's No. 2 Ashby, 150 ft. from N and 2,213 ft. from W of 119-ac. tract, Juan Ximenes Sur. ..... Drlg. 2,803 ft.

E. M. Jones et al's No. 1 W. R. Crim, 150 ft. N and 150 ft. W of 50-ac. tract, Robert E. Winn Sur. ..... Preparing to spud.

Knox et al's No. 1 M. A. Melton, 363 varas N, 140 varas W, Eliz Milton Sur. ..... Derrick.

L. Lloyd Oil Corp. et al's No. 1 Nicey, 150 ft. S and 300 ft. W of 25-ac. tract (NW cor. of county), Thomas Obar Sur. ..... Drlg. 500 ft.

E. C. Laster's No. 1 Daisy Bradford, 150 ft. from E and 150 ft. from S of Lot 14, Juan Ximenes Sur. ..... Top Pecan Gap 2,545 ft.; elev. 387 ft.; drlg. 2,743 ft.

Lide et al's No. 1 Calvin Young, 3,015 ft. E and 3,373 ft. S, M. J. Prue Sur. ..... Cored oil sand 3,677-88 ft.; will run csg.; T. D. 3,688 ft.

Mass et al's No. 1 Matthews, 3,244 ft. from N, 4,356 ft. from E, Dalines Cartimas Sur. ..... Shut down 2,338 ft.

Moss & Urschel's No. 1 Mayfield-Alford, 221 ft. S and 209 ft. W of 10-ac. lease, Juan Ximenes Sur. ..... Rig up.

A. A. Malone's No. 1 G. T. Moore, 150 ft. from E and 150 ft. from S, Juan Ximenes Sur. ..... Derrick.

W. Olvey's No. 1 Mrs. W. R. Crim, 150 ft. N and 150 ft. W of lease, Robert E. Winn Sur. ..... Rig up (rotary).

Pearl Oil Co.'s No. 1 D. W. Eaton, 975 ft. from most southerly S line of middle tract and 400 ft. from W line in Francisco Cordova Sur. ..... Rig.

Rusk County Oil Co.'s No. 1 Robertson, 150 ft. N along W line of George Guthrie Sur. from SE cor. and 150 ft. W of E line of Robertson 20-ac. tract, R. H. Pinney Sur. ..... Shut down 1,110 ft.; elev. 514 ft.

George Page's No. 1 William Camp, 150 ft. from S and 650 ft. from W of 5-ac. tract, J. Ximenes Sur. ..... Rigged up and shut down.

Roberts Oil Corp.'s No. 1 C. D. Ashby, 150 ft. N and 1,580 ft. W of Ashby 119-ac. tract, Juan Ximenes Sur. ..... Drlg. 3,477 ft.; elev. 417 ft.

Rusco Oil Co.'s No. 1 Daisy Bradford, 150 ft. from E and 330 ft. from W, Lot 13, Juan Ximenes Sur. ..... Oil sand 3,539-41 ft.; set 6⅝-in. csg.; T. D. 3,541 ft.

Nat Saddler's No. 1 Ed Sparks, 350 ft. from E and 150 ft. from S of survey, L. C. Rugg Sur. ..... Drlg. 200 ft.

B. J. Shaw's No. 1 C. D. Ashby, 367 ft. N and 1,763 ft. W of 119-ac. tract, Juan Ximenes Sur. ..... Drlg. 2,930 ft.

E. K. Tennant's No. 1 Daisy Bradford, 150 ft. N and 150 ft. W of Lot 1, Juan Ximenes Sur. ..... Rig up.

United Prod. Oil Co.'s No. 1 Mayfield-Alford, 150 ft. from S and 2,233 ft. from W of 105-ac. tract, Juan Ximenes Sur. ..... Rig up.

SMITH COUNTY

Thayer & Rogers' No. 1 Willingham, 150 ft. N and W of 14.5-ac. tract, Jacob Hernin Sur. ..... Shut down 2,000 ft.

Winona O. & G. Co.'s No. 1 Freeman, 150 ft. from S, W of 89-ac. tract in A. J. Legrone Sur., 4 miles SE of Winona ..... Shut down 3,681 ft.

VAN ZANDT COUNTY

L. R. Barton's No. 1 Wamble, 300 ft. from S and W of 106-ac. tract in Pleasant Young Sur. ..... Derrick.

Burton Drlg. Co.'s No. 1 Flores, 2,250 ft. from N and 150 ft. from W of SE cor. in Peter Holmes Sur. ..... Location.

Cranfill & Germany's No. 1 Swain, 137 ft. N and 50 ft. from W of excess strip on W side of O. L. and L. L. Swain farm ..... Shut down 14 ft.

T. Daniels' No. 1 Fannie Cumbine, 185 ft. S and 175 ft. E of NW cor. 156-ac. tract, John Wright Sur. ..... Temporarily abnd.

Dennis Oil Co.'s No. 1 C. W. Morris, 100 ft. from N and 300 ft. from E lines of Morris 160-ac. tract in C. L. Morris Sur., 5 miles SE of Ben Wheeler ..... Temporarily abnd.

J. C. Fare's No. 1 P. S. Hand, C of Hand's 50-ac. tract, William Shuman Sur. ..... Drlg. 4,955 ft.

Hartt Oil Co.'s No. 1 Dr. L. M. Cox and A. C. Night Sur., 1,785 ft. N of S line and 524 ft. E of W line ..... Shut down 200 ft.

H. Helms et al's No. 1 Bogue, 647 ft. W and 155 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ..... Shut down 2,840 ft.

Howard & Dooley's No. 1 Elliott 188-ac. tract in W. H. Bundy Sur. ..... Derrick.

Humble Oil & Ref. Co.'s No. 8 Ruth Starr Blake, 400 ft. W and 100 ft. N of NW cor. of Ella York lease No. 102, John Walling Sur. ..... Drlg. 700 ft.

Humble Oil & Ref. Co.'s No. 1 L. A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur. ..... Temp. abnd. 2,987 ft.

Imperator Oil Co.'s No. 2 G. W. Carter, 175 ft. from S and 35 ft. from W of G. W. Carter 171-ac. tract, William Daniel Sur. ..... Shut down.
Hankins et al's No. 1 V. T. Davis, SE cor. of 139.8-ac. tract, Nacogdoches County School Land ..... Shut down 3,031 ft.; pumps 8 bbls. every 2 days.
Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... Shut down 2,300 ft.
Nell McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ..... Shut down 263 ft.
Pure Oil Co.'s No. 3 R. A. Howell, 225 ft. N and E of SW cor., Mund Gross Sur. ..... Drlg. plug. 2,709 ft.
Pure Oil Co.'s No. 2 A. G. Tunnell, 250 ft. N of S line and 200 ft. W of E line, John Walling Sur. .... T. D. 2,942 ft.; testing; shut in.
Pure Oil Co.'s No. 1 Davis, 127 ft. from S and 200 ft. from W of 139-ac. tract, Nacogdoches County School Land ..... Derrick standing.
Pure Oil Co.'s No. 2 Mayo, 200 ft. from S and 835 ft. from E of lease, J. Prado Sur. ..... Drlg. 1,717 ft.
Pure Oil Co.'s No. 4 W. F. Swain, 250 ft. S of N line and 200 ft. W of E line of lease, Mund Gross Sur. ..... Derrick.
Pure Oil Co.'s No. 3 O. L. Swain, 250 ft. S of N line and 250 ft. W of E line, John Walling Sur. ..... Drlg. 806 ft.
Pure Oil Co.'s No. 8 A. D. Clark, 150 ft. from E of W line and 200 ft. N of S line of lease, John Walling Sur. ..... Drlg. 2,382 ft.
Pure Oil Co.'s No. 2 R. L. Wells and A. T. Tunnell, 744 ft E of W line and 250 ft. N of S line of lease in H. V. Moore Sur. ..... Drlg. 2,010 ft.
Pure Oil Co.'s No. 2 J. D. Miller, 250 ft. N of S line and 250 ft. E of W line of lease in John Walling Sur. ..... Derrick.
Pure Oil Co.'s No. 3 R. H. Peters, 250 ft. E of W line and 250 ft. N of S line of lease in Nacogdoches County School Land Sur. ..... Running 7-in. csg. 2,848 ft.
Pure Oil Co.'s No. 2 L. A. Smith, 632 ft. N of S line and 250 ft. E of W line of lease, John Walling Sur. ..... Drlg. 346 ft.
Pure Oil Co.'s No. 3 F. B. Smith, 250 ft. S and 200 ft. W of SE cor. of Ella York 39.6-ac. tract, John Walling Sur. ..... Drlg. 816 ft.
Pure Oil Co.'s No. 1 M. R. Blake, 225 ft. W of E line and 200 ft. S of N line of lease in Schmitz Sur. .... Drlg. 2,189 ft.
Pure Oil Co.'s No. 3 C. C. Stewart, 225 ft. N and 225 ft. W of most easterly SE cor. of lease, A. McPhail Sur. ..... Drlg. 2,325 ft.
Roy Stumpff's No. 1 Riggs, 169 ft. from E and 155 ft. from S of 3-ac. tract, William Daniel Sur. ..... Derrick (rotary).
The Texas Company's No. 5 R. A. Tunnell, 495 ft. S of N line and 200 ft. E of most westerly W line, John Walling Sur. ..... Drlg. 2,720 ft.
Tri Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. .... Shut down 1,028 ft.
Tritek Oil Co.'s No. 1 Smith, 150 ft. S and 15 ft. from W of L. A. Smith 40-ac. farm in John Walling Sur. .. Derrick.
Whitmore Oil & Gas Co.'s No. 1 R. W. Beggs, 300 ft. from S and 600 ft. from W, Raquet Sur. ..... Drlg. 1,110 ft.
Wilson et al's No. 1 Stribling, 1,563 ft. W of E line and 800 ft. S of N line of M. B. Fisher 172-ac. in Phillips Mason Sur. ..... Rig up.

WOOD COUNTY

Zoche & Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. .... Shut down 997 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 66)

GAINES COUNTY

Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE, Sec. 4, Blk. A-8, P.S.L. Sur. ..... Lowering 12½-in. casing; total depth 935 ft.

GARZA COUNTY

Tandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. ..... Spudded and shut down.
Terry & Forsey's No. 1 Justice, 1,980 ft. from S and 1,680 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-foot cable tool test) ..... Moving in material.

GLASSCOCK COUNTY

World Oil Co.'s No. 3-C McDowell, 2,310 ft. from S and W of NE cor., Sec. 21, Blk. 34, Twp. 2s. T.&P. Sur. .... Temp. abd.; total depth 660 ft.

HOWARD COUNTY

J. F. Getty's No. 1 Snyder, Sec. 27, Blk. 10, Twp. 1s, SW cor. NE NE ..... Shut down 3,500 ft.
Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W, Sec. 14, Blk. 30, Twp. 1s, T.&P. Sur. Location.
Group No. 1 Oil Corp.'s No. 2 Eason, 1,320 ft. from S and W, Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur. ..... Drlg. 1,950 ft.
Magnolia Pet. Co.'s No. 1 Kelly Roberts, 330 ft. S and E, Sec. 112, Blk. 29, W.&N.W. Sur. ..... Shut down 1,711 ft.; pumping 12 bbls. daily.
Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Temp. abd. 261 ft.

HUDSPETH COUNTY

Nelson's No. 1 University, 3,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E ..... Spudded 35 ft. and shut down.

IRION COUNTY

Central Oil Co.'s No. 2 Horney, 150 ft. from N and 1,320 ft. from E, Sec. 3, Blk. 3, H.&T.C. Sur. ..... Shut down 1,299 ft.
Cromwell et al's No. 3 Tankersley, 150 ft. from N and 210 ft. from W of E half Sec. 1,320, G.C.&S.F. Sur. .. Shut down 1,712 ft.; show oil 1,621-25 ft.
Denny & Andrews' No. 1 Tankersley, 1,000 ft. from E and 460 ft. from S of H. J. Volker Sur. No. 723 ..... Running 10-in. casing 825 ft.
Dixie Oil Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... Drlg. 860 ft.
Draughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ..... Shut down 1,473 ft.
E. F. Webb's No. 1 W. H. Williams, 200 ft. from E and 750 ft. from S line, SW NE, Sec. 10, Gonzales County School Land ..... Shut down 100 ft.

JONES COUNTY

Bond & Trout's No. 1 Williams, 330 ft. S and E of SW cor. of J. W. Martin Sur. A-1,308 in Sec. 12 ..... Drlg. 1,460 ft.
C. L. Hart et al's No. 1 Roberts ..... Total depth 1,000 ft.
Jameson et al's No. 1 King, 4,681 ft. from S and 150 ft. from E of M. Bueno Sur. No. 196 ..... Fishing 1,550 ft.
Shaheen & Duffy's No. 1 King, 2,650 ft. from N and from N and W, Lot 5, M. Bueno Sur. No. 197 ..... Shut down 2,007 ft.; flowing steady rate of 11 bbls. an hour.
Union Oil Co. of Nevada & Shaheen's No. 1 King, 200 ft. from N and W, Lot 5, M. Bueno Sur. No. 197 ..... Drlg. 400 ft.
W. C. Yingling et al's No. 1 Cade, 330 ft. from N and W from SE cor. NW, Sec. 17, Blk. 19, T.P. Sur. ..... Swabbing and testing 2,555 ft.; swabbed 65 bbls. first 12 hrs.
Yingling et al's No. 1 Williams, 330 ft. N and E of SE cor. of Cade 160-acre tract but in Williams 200-acre farm, Sec. 17, Blk. 19, T.&P. Sur. ..... Location.

LOVING COUNTY

Cromwell et al's No. 1 Russell et al, 2,310 ft. from NE and 330 ft. from NW, Sec. 80, Blk. 1, W.&N.W. Sur. .. Drlg. 3,000 ft.
Douglas et al's No. 1 Wheat & Ramsey, 330 ft. from SE and 2,310 ft. from SW, Sec. 83, Blk. 1, W.&N.W. Sur. .. Drlg. 910 ft.
Eppenauer et al's No. 2 Allen, 2,310 ft. from NE and 330 ft. from NW, Sec. 90, Blk. 1, W.&N.W. Sur. ..... Cellar.
Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW, Sec. 79, Blk. 33, H.&T.C. Sur. ..... Rig.
Henshaw et al's No. 2 Reagan & McElvain, 1,650 ft. from SW and 990 ft. from SE, Sec. 84, Blk. 7, W.&N.W. Sur. ..... Rig.
Hoffman et al's No. 1 Ramsey et al, 330 ft. NE and SE Sec. 83, Blk. 1, W.&N.W. Sur. ..... Rig.
Hoffman et al's No. 2 Ramsey et al, 2,310 ft. from NE and 330 ft. from SE, Sec. 83 ..... Location.
Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Shut down 3,383 ft.
Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W, Sec. 91, Blk. 1, W.&N.W. Sur. ..... Shut down 4,016 ft.
Lockhart's No. 1 Hubbard, 6,930 ft. from NE and 330 ft. from SE, Sec. 83, Blk. 33, H.&T.C. Sur. ..... Drlg. 540 ft.
Lockhart & Co.'s No. 3 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 33, H.&T.C. Sur. ..... Rigged up and shut down.
Miller et al's No. 1 Chapman, 225 ft. from NW and 285 ft. from SW line, Sec. 71, W.&N.W. Sur. ..... Total depth 4,356 ft.; flows every third day.
Rush et al's No. 1 Wheat, 330 ft. from NW and SW, Sec. 77, Blk. 1, W.&N.W. Sur. ..... Cellar.
Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W, Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ..... Drlg. 1,460 ft.
California Co.'s No. 2 Allen, 2,310 ft. from SE and SW lines, Sec. 90, Blk. 1, W.&N.W. Sur. ..... Rig.
California Co.'s No. 6 Reagan & McElvain, 330 ft. from SW and 1,650 ft. from SE, Sec. 84, Blk. 1, W.&N.W. Sur. ..... Total depth 4,268 ft.; plugged back to 4,265 ft.; swabs 60 bbls. per day; prepare to shoot.
California Co.'s No. 7 Reagan & McElvain, 2,032 ft. from SE and 1,014 ft. from NE of Sec. 84, Blk. 1, W.&N.W. Sur. ..... Drlg. 3,040 ft.

MENARD COUNTY

Barnett et al's No. 4 Callan City Co., 1,200 ft. from S and 2,200 ft. from W, Sec. 1, B.S.&F. Sur. ..... Machine.
Priest's No. 1 Sorrell, 1,000 ft. from E and 200 ft. from S cor., Sec. 132, E.L.R.R. Sur. ..... Drlg. 2,712 ft.

MITCHELL COUNTY

Lewis & Slagel's No. 1 Bell ..... Shot 450 qts. 2,595-2,820 ft.; flowed 160 bbls. first 24 hrs. after shot; total depth 2,827 ft.
Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. Sur. ..... Shut down 3,112 ft.; top pay 3,038-75 ft.; shot 270 qts. 3,020-92 ft.; swabbed 40 bbls. in 24 hrs.
Morrison et al's No. 1 Poe et al, 660 ft. S and 1,980 ft. W, parallel to section lines of NE cor., Sec. 8, Blk. 27, T.&P. Sur. ..... Spudded 10 ft. and shut down.

PECOS COUNTY

Bell et al's No. 1 Schraff & Blackman, 2,310 ft. NE and 330 ft. NW of E cor., Sec. 37, Blk. 3, H.&T.C. Sur. ... Shut down 1,624 ft.; top pay 1,600 ft.; shot 50 qts.; hole filled up 350 ft. oil in 12 hrs.
Bell et al's No. 1 Eaton (Sun Oil Co.), 2,310 ft. from NE and SE, Sec. 35, Blk. 3, H.&T.C. Sur. ..... Drlg. 1,025 ft.
Culberson Bros.' No. 1 Tippett (Humble), 150 ft. S and 843 ft. E of C Sec. 40, Blk. 194, G.C.&S.F. Sur. ..... Location.
Dittman's No. 1 Jackson, 2,310 ft. from NE and 330 ft. from NW, Sec. 28, Blk. 3, H.&T.C. Sur. ..... Rig up.
Dittman's No. 2 Eaton, 990 ft. from SW and 330 ft. from SE, Sec. 35, Blk. 2, H.&T.C. Sur. ..... Location.
Dittman's No. 1 Eaton, 330 ft. from NE and SE, Sec. 37, Blk. 3, H.&T.C. Sur. ..... Shut down 1,674 ft.; top pay 1,618 ft.; hole filled 1,000 ft. with oil.
Humble Oil & Ref. Co.'s No. 1 Kokernot, 1,320 ft. from N line and 1,467 ft. from W line of Sec. 227, Blk. 10, G.H.&S.A. Sur. ..... Shut down 6,170 ft.
Lancaster's No. 1 Eaton (Pure), 330 ft. from SE and SW, Sec. 35, Blk. 3, H.&T.C. Sur. ..... Spudding.
Magnolia Pet. Co.'s No. 1 Eaton, 2,310 ft. from SW and 330 ft. from NW, Sec. 35, Blk. 3, H.&T.C. Sur. ..... Spudding.
Mann's No. 1 Schraff & Blackman, 3,000 ft. from SW and 990 ft. from SE, Sec. 32, Blk. 3, H.&T.C. Sur. .... Drlg. 1,888 ft.
McCurdy & Brown's No. 2 Tippett, 150 ft. from N and W of SE, Sec. 40, Blk. 104, G.C.&S.F. Sur. ..... Location.
McCarty Oil Co.'s No. 3 Gray, 700 ft. from N and 2,260 ft. from W, Sec. 591, G.C.&S.F. Sur. ..... Fishing 1,437 ft.
Messenger et al's No. 1 Butz, 1,830 ft. from NW and 1,170 ft. from SW, Sec. 54, Blk. 10, H.&G.N. Sur. ..... Shut down 1,299 ft.
Mid-Kansas O. & G. Co. et al's No. 1-A Sellman, 250 ft. from S and 330 ft. from W, Sec. 12, Blk. 194, G.C. &S.F. Sur. ..... Shut down 1,745 ft.
J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL, Sec. 1, Blk. 119, G.C.&S.F. Sur. ..... Drlg. 2,005 ft.
J. D. O'Mara's No. 1 Bennett, Sec. 593, 1,460 ft. from S, 150 ft. from E, G.C.&S.F. Sur. ..... Total depth 1,230 ft.; top pay 1,089 ft.; plugged back to 1,186 ft.; will drill deeper.
J. D. O'Mara's No. 1 Streety, S of Sec. 1, W. P. Howard Sur. ..... Shut down 2,210 ft.
Penn Oil Co. et al's No. 1 Alvis, 2,358 ft. from S and 1,327 ft. from W, Sec. 155, Blk. 3, T.&P. Sur. ..... Underream 10-in. casing 1,550 ft.
Perren Oil Co.'s No. 2 Eaton, C of E, Sec. 27, Blk. 3, H.&T.C. Sur. ..... Shut down 1,765 ft.
Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203, Blk. 3, T.&P. Sur. ..... Shut down 5,000 ft.
Riser & White's No. 1 Riser, 2,297 ft. from S and 997 ft. from E of Sec. 24, Blk. 12, H.&G.N. Sur. ..... Shut down 500 ft.
Side & Side's No. 1 Blackstone & Slaughter, C NW, Sec. 34, Blk. A-2, T.C. Sur. ..... Shut down 3,405 ft.; plugged back to 3,103 ft. and shut down.
Schilling & Slaughter's No. 1 Yates, 1,580 ft. N and 150 ft. E of NW cor. Runnels County School Land, but located in Sec. 70, Blk. 1, I.&G.N. Sur. ..... Shut down 337 ft.
Southern Crude Oil Pur. Co.'s No. 1 Schraff & Blackman, 4,550 ft. 40° E and 330 ft. 50° W of most southerly cor., Sec. 38, Blk. 3, H.&T.C. Sur. ..... Drlg. 2,197 ft.
California Co. et al's No. 1 Thomas, 990 ft. from NW and SW, Sec. 31, Blk. 34, H.&T.C. Sur. ..... Location.
The Texas Company's No. 1 Wright, 660 ft. S and E of NW cor., Sec. 9, Blk. 131, T.&St.L. Sur. ..... Shut down 3,504 ft.
Williams & Moran's No. 1 Heiner Est., 450 ft. from N and 2,490 ft. from W of Sec. 590, G.C.&S.F. Sur. ..... Drlg. 1,660 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 5-C University, 625 ft. from S and 900 ft. from W of Sec. 25, Blk. 9 ..... Flowed 1,860 bbls. 24 hrs. ended 7 a.m. Jan. 20; tested 27,737,000 ft. gas; total depth 8,718 ft.
Big Lake Oil Co.'s No. 6-C University, 1,120 ft. S and 1,100 ft. from W, Sec. 25, Blk. 9 ..... Location.
Texon O. & L. Co.'s No. 4-B University, 1,130 ft. from N and W of Sec. 26, Blk. 9 ..... Flowed 6,194 bbls.; gauged 62,000,000 ft. gas Jan. 20; total depth 8,587 ft.

REEVES COUNTY

R. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 380 ft.
Riggs & Smith's No. 1 Lee Monroe, 2,190 ft. from NE and 330 ft. from NW line, Sec. 34, Blk. 8, H.&L.N. Sur. ..... Shut down 264 ft.
Salsbury & Gregory's No. 1 Young Pyll, 1,170 ft. from N and 330 ft. from NW line, Sec. 34, Blk. 7, H.&L.N. ... Temporarily abandoned.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ... Shut down 4,415 ft.

California Co.'s No. 2 Kloh & Rumsey, 990 ft. from S and 1,520 ft. from E. Sec. 11, Blk. 54, Twp. 4, T.&P. Sur. ... Drlg. 1,014 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 419 ... Shut down 2,175 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ... Drlg. 620 ft.

Teas & Gant's No. 1 Allison, 1,320 ft. N and E of SW cor. Sec. 37, Blk. K, G.H.&S.A. Sur. ... Shut down 4,445 ft.

Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ... Cleaning 750 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A. Sur. ... Shut down 5,027 ft.

SCURRY COUNTY

J. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ... Shut down 4,970 ft.

Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W, Sec. 68, Blk. 3, H.&G.N. Sur. ... Cellar.

Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 155, Blk. 97, H.&T.C. Sur. ... Shut down 2,316 ft.

STERLING COUNTY

Beesley et al's No. 1 Foster, 2,940 ft. N and 300 ft. W of SW cor. Sec. 7, Blk. 22, H.&T.C. Sur., but in Sec. 16, Blk. 21, Twp. 4s, T.&P. Sur. ... Hole junked; will skid; total depth 645 ft.

TAYLOR COUNTY

Eastland Oil Co. et al's No. 2 Hunter, 3,418 ft. from S and 2,174 ft. from E of William R. Ellis Sur. ... Total depth 2,750 ft.; plugged back to 2,398 ft.; swabbed 60 bbls. oil and 90 bbls. water.

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ... Drlg. plug 6,251 ft.

Sanger et al's No. 1 City of Abilene, 830 ft. from S and 1,400 ft. from E of Sec. 66, Blind Asylum Land ... Drlg. 2,585 ft.

Sanger O. & R. Co.'s No. 1 Osborn, 330 ft. from SW of SE, Sec. 68, Blind Asylum Land ... Rigged up and shut down.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T. Sur. ... Shut down 2,669 ft.

Keck Pecos Trust Co.'s No. 1 Hamilton, C, Sec. 6, Georgetown Ry. Sur. ... Shut down 3,150 ft.

Miller Bros.' No. 1 Allison & Burke, C NW cor., Sec. 10, Blk. 176, T.&P. Sur. ... Shut down 120 ft.

Mrs. J. B. McPhees' No. 1 Sam Belt, C, Sec. 16, Blk. D-7, E.L. Sur. ... Shut down 880 ft.; moved off machine.

Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F. Sur. ... Shut down 5,527 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ... Shut down 640 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. ... Shut down 760 ft.; show oil and gas 725 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Dinger Sur. ... Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.

Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. ... Shut down 1,994 ft.

Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ... Shut down 200 ft.

UPTON COUNTY

Corzelius et al's No. 1 Shirk (Tidal Oil Co.), 2,317 ft. from W and 418 ft. from S, Sec. 15, Blk. 3, M.-K.-T. ... Drlg. 2,235 ft.

Duffey et al's No. 3 McClintic, 330 ft. from N and 1,650 ft. from E, Sec. 206, Blk. F, C.C.S.D.&R.G.N.G. Sur. ... Drlg. 2,955 ft.

Humble O. & R. Co.'s No. 15 Ricker, 3,300 ft. from NE and 3,280 ft. from NW, Sec. 5, Mary S. Denton Sur. ... Drlg. 2,060 ft.

R. R. Penn & Shell Pet. Corp.'s No. 1 Halamicek, C SE Sec. 93, Blk. D, C.C.S.D.&R.G.N.G. Sur. ... Drlg. 2,959 ft.

T. P. Coal & Oil Co.'s No. 1 King Ranch Oil & Lignite Co., 2,310 ft. from N and 990 ft. from W, Sec. 28, Blk. 2, M.-K.-T. Sur. ... Shut down 2,445 ft.

Weekly Oil Corp. et al's No. 1 McClintic, 1,650 ft. from N and 330 ft. from E, Sec. 206, Blk. F, C.C.S.D. &R.G.N.G. Sur. ... Swabbing 50 to 60 bbls. per day; waiting on tubing; total depth 3,004 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE, Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ... Shut down 5,360 ft.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ... Fishing 6,780 ft.

Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 33, Blk. D-8, E.L. Sur. ... Shut down 3,035 ft.

Valvert Oil Corp.'s No. 1 Bassett, C NE Sec. 47, Blk. Y. ... Shut down 4,009 ft.

WARD COUNTY

Empire Gas & Fuel Co.'s No. 1 John Sealy estate, 330 ft. from S and 1,650 ft. W of NE cor., Sec. 5, Blk. F, T.&M.M. Bros. Sur. ... Fishing for tools 2,610 ft.; spraying 25 bbls. oil per day.

Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. ... Show gas 1,960-70 ft.; filling up with sulphur water 2,520-77 ft.; salt water 2,515 ft.; plugged back to 2,477 ft.

Gulf Prod. Co.'s No. 16 O'Brien, 2,310 ft. from S and 990 ft. E. Sec. 16, Blk. F, L.M.&W.B.&A. Sur. ... Drlg. 1,291 ft.

Kugle et al's No. 1 Wallace, 330 ft. from SE and 1,263 ft. from SW, Sec. 19, Blk. 34, H.&T.C. Sur. ... Total depth 1,720 ft.; preparing to cement 8¼-in. casing.

Magnolia Pet. Co.'s No. 1 Sealy (Atlantic), 2,130 ft. from S and 1,650 ft. from E, Sec. 45, Blk. F, G.M.M.B.&A. Sur. ... Drlg. 625 ft.

R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 33, H.&T.C. Sur. ... Drlg. 1,850 ft.

Prairie O. & G. Co.'s No. 1 Hill, 330 ft. from NE and NW, Sec. 30, Blk. B-29, P.S.L. Sur. ... Drlg. 730 ft.

Rickford & Smith's No. 1 Johnson, 120 ft. NE and 175 ft. SE of N cor., Sec. 7, Blk. 32, H.&T.C. Sur., but located in Sec. 11, Blk. 5, H.&T.C. Sur. ... Shut down 1,550 ft.

Paul Ryan's No. 1 Allen, 998 ft. from NW and 3,624 ft. from NE, Sec. 11, Blk. 5, H.&T.C. Sur. ... Rig up.

Shipley et al's No. 5 Hayzlett, 2,490 ft. from SE and 1,980 ft. from SW, Sec. 17, Blk. 5, H.&T.C. Sur. ... Shut down 760 ft.

California Co. et al's No. 1 Lanham, 990 ft. from NE and SE, Sec. 35, Blk. 34, H.&T.C. Sur. ... Building rig.

California Co.'s No. 1 Gordon, 330 ft. from NE and SE, Sec. 6, Blk. 34, H.&T.C. Sur. ... Rig.

Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 ... Fishing 3,780 ft.

California Co.'s No. 1 Allen, 2,310 ft. from NE and 330 ft. from SE, Sec. 30, Blk. 34, H.&T.C. Sur. ... Total depth 2,710 ft.; preparing to shoot.

WINKLER COUNTY

Magnolia Pet. Co.'s No. 1 Bashara, 1,650 ft. from S and 2,310 ft. from W, Sec. 17, Blk. B-3, P.S.L. Sur. ... Fishing 2,520 ft.

Magnolia Pet. Co.'s No. 1 Walton, 2,310 ft. from N and W Sec. 16, Blk. 77, P.S.L. Sur. ... Drlg. 965 ft.

A. W. "Phillips" No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ... Shut down 3,506 ft.

Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ... Shut down 4,639 ft.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 62)

Danciger O. & R. Co.'s No. 1 Sullivan, 231 ft. N, 224 ft. W. of E 160 ac. of S 264 ac., N½, Sec. 136, Blk. 3, H.&G.N. Sur. ... S.D. 2,383 ft.

Danciger O. & R. Co.'s No. 1 Barrett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur. ... T.D. 2,863 ft; standardizing.

Danciger O. & R. Co.'s No. 2 Sullivan, 231 ft. N, 884 ft. W of E 160 ac. of S 264 ac., N½, Sec. 136, Blk. 3, H.&G.N. Sur. ... Estimated 6,000,000 ft. gas 2,9[illegible] 3,065 ft; S.O. 3,155-69 ft; 7,[illegible] 3,217 ft; swbng. 30 bbls. a d[illegible] from lime pay 3,155-69 ft.

Empire G. & F. Co.'s No. 3 Wall, 990 ft. S and W, NW, Sec. 161, Blk. 3, I.&G.N. Sur. ... Location.

Empire G. & F. Co.'s No. 1 Ruscoe, 1,320 ft. N, 660 ft. E, W½ SE, Sec. 111, Blk. 3, I.&G.N. Sur. ... Drlg. 1,220 ft.

Hurst et al's No. 1 Ayres, 330 ft. S and E, Sec. 76, Blk. 3, I.&G.N. Sur. ... Rotary rig.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur. ... Fishing tools 2,770 ft.

Kewanee O. & G. Co.'s No. 1-D Morse, 330 ft. N and W, S½ SW, Sec. 16, Blk. A-9, H.&G.N. Sur. ... Rotary rig.

Kewanee O. & G. Co.'s No. 1-E Morse, 330 ft. N and E, S½ SE, Sec. 15, Blk. 9-A, H.&G.N. Sur. ... Rigging up.

Magnolia Pet. Co.'s No. 2 Heitholt, 150 ft. S, 1,156 ft. W, SE, Sec. 152, Blk. 3, I.G.N. Sur. ... Drlg. 2,475 ft.

Magnolia Pet. Co.'s No. 4 Latham, 300 ft. N, 820 ft. E, Sec. 153, Blk. 3, I.&G.N. Sur. ... Location.

Magnolia Pet. Co.'s No. 1 Eddington, 330 ft. N, 370 ft. E, NE, Sec. 34, Blk. B-2, H.&G.N. Sur. ... Drlg. 1,930 ft.

Magnolia Pet. Co.'s No. 1 Morse, 330 ft. N and W, S½ NE, Sec. 5, Blk. 26, H.&G.N. Sur. ... Drlg. 2,240 ft.

Magnolia Pet. Co.'s No. 2 Sailor, 330 ft. S and W, E½ NE, Sec. 138, Blk. 3, I.&G.N. Sur. ... Building rig.

Mazda Oil Co.'s No. 1 Combs & Worley, 330 ft. S, 180 ft. W, NE, Sec. 35, Blk. 3, I.&G.N. Sur. ... T.D. 2,930 ft; T.P. 2,924 ft; est[illegible] mated 100 bbls. oil with 17,000,[illegible] 000 ft. gas.

McIlroy Oil Co.'s No. 1 Baer, 330 ft. S and W, Sec. 125, Blk. 3, I.&G.N. Sur. ... Rotary rig.

Midgray Oil Co.'s No. 1 McCullough, 267 ft. N, 150 ft. E of 246.9 ac. in Sec. 153, Blk. 3, I.&G.N. Sur. ... S.O. 3,155 ft. and 3,200-09 ft; 7,[illegible] 3,330 ft; P.B. 3,325 ft; shot wit[illegible] 250 qts. from 3,150-3,220 ft; C[illegible]

Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. ... Fishing for bit; T.D. 2,620 ft.

Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, I.&G.N. Sur. ... Rig.

Phillips Pet. Co.'s No. 2 Barrett, 130 ft. N, 465 ft. W, Sec. 136, Blk. 3, I.&G.N. Sur. ... Drlg. 3,262 ft.

W. A. Scott's No. 1 Cobb, 330 ft. S, 425 ft. W, N½ SE, Sec. 184, Blk. 3, I.&G.N. Sur. ... Estimated 4,000,000 ft. gas 2,1[illegible] ft; drlg. 3,130 ft.

Skelly Oil Co.'s No. 1 Heitholt, 150 ft. N, 3,806 ft. W, Sec. 153, Blk. 3, I.&G.N. Sur. ... S.D. 3,000 ft; flowed 2,950 bbls. [illegible] 12 hrs. and 36,000,000 ft. ga[illegible] first 4 hrs.

Smith's No. 1 Morse, 200 ft. S, 330 ft. W. Sec. 6, Blk. 26, H.&G.N. Sur. ... 3,000,000 ft. gas 2,150-70 ft; S.D. 2,892 ft; 400 ft. oil in hole.

Southern States Gas Co.'s No. 1 Case, 330 ft. N and W, E½, Sec. 181, Blk. B-2, H.&G.N. Sur. ... Spudded.

Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. ... Rig.

Warner Oil Co.'s No. 1 Morse, 330 ft. S and W, N½ NW, Sec. 68, Blk. 25, H.&G.N. Sur. ... Cellar.

HUTCHINSON COUNTY

Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. ... Drlg. 250 ft.

Dixon Creek Oil Co.'s No. 1-F Johnson Bros., 330 ft. N and E of W 67 ac., SW, Sec. 15, Blk. XO3, H.&O.B. Sur. ... Drlg. 1,900 ft.

Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E. of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. ... Rotary rig.

Liner Drlg. Co.'s No. 1-D Johnson Bros., 330 ft. N and E, W½ SW, Sec. 6, Blk. 1, B.&B. Sur. ... S.D. 2,773 ft.

Liner et al's No. 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 29, Blk. Y, A.&B. Sur. ... Spudded and S.D.

Stanolind O. & G. Co.'s No. 1 Barnhill, common cor. of tracts 28, 29, 30 and 31 of G. Martinez Sur., Blk. 2. ... Drlg. 2,780 ft.

Sinclair O. & G. Co.'s No. 1-A Johnson Bros., 330 ft. N, 430 ft. E, NW, Sec. 32, Blk. Y, A.&B. Sur. ... C.O. 3,000 ft.

Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 30, Blk. Y, A.&B. Sur. ... S.O. 3,065 ft. and 3,108-10 ft; S.D. for pipe line connection 3,110 f[illegible]

Texilvania Oil Co.'s No. 1 Harvey, 330 ft. N and W, SW NW, Sec. 14, Blk. M-21 ... Spudding.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ... T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ... Small S.O. 1,133-40 ft; S.D. [illegible] 167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. ... Drlg. 2,405 ft.

Continental Oil Co.'s No. 1 Brown, 990 ft. N and W, SE, Sec. 172, Blk. 3-T, T.&N.O. Sur. ... Spudding.

Dana O. & G. Co.'s No. 1 R. Utey, 330 ft. N, 330 ft. E, W½ SE, Sec. 135, T.&N.O. Sur. ... Rig on ground.

Gulf Prod. Co.'s No. 1 Dare, C SE, Sec. 312, Blk. 44, H.&T.C. Sur. ... T.D. 3,102 ft; 13,000,000 ft. gas.

Gulf Prod. Co.'s No. 2 Kilgore, C SE, Sec. 29, Blk. P.Mc., E.L.R.R. Sur. ... Drlg. 345 ft.

Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E. NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. ... Cellar.

Plains Holding Co.'s No. 1 Bridges, 1,690 ft. S and E, NW, Sec. 252, Blk. 3-T, T.&N.O. Sur. ... Rig on ground (rotary).

Shamrock O. & G. Co.'s No. 1 Sullivan, 330 ft. S and E, NE, Sec. 139, Blk. 3-T, T.&N.O. Sur. ... S.D. 3,590 ft.

Sunray Oil Co.'s No. 2 Jones, 330 ft. S, 990 ft. E, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ... Rig on ground.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ... S.D. 580 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ... Spudded and S.D.

Chambers et al's No. 1 Herring, CNL, Sec. 29, Blk. S, G.C.&S.F. Sur. ... S.D. 680 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-B Crawford ... Drlg. 780 ft.

WHEELER COUNTY

Devore & Robinson's No. 1 Sitter, 2,310 ft. S and E, Sec. 33, Blk. 24, H.&G.N. Sur. ... T.D. 1,800 ft; set 10-in. csg.

Woodley et al's No. 1 Sloss & Admire, 660 ft. N, 330 ft. E, Sec. 47, Blk. 13, H.&G.N. Sur. ... Estimated 25 bbls. oil from [illegible] 2,205-23 ft; T.D. 2,250 ft; P.B. to 2,208 ft; to reset pipe and test show oil in lime 2,156-2[illegible] 208 ft.

Vollmert's No. 1 Porter, 330 ft. S and E. NE, Sec. 15, Blk. 27, H.&G.N. Sur. ... Rig.

HYDRAULIC LIFTING OF PLUG ASSURES UNIFORM DISTRIBUTION OF LUBRICANT . . .

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It is of utmost importance that a uniform distribution of lubricant be obtained in a lubricated valve. Otherwise, channels may remain unlubricated, causing leaks.

Positive uniform distribution of special "Merco" lubricant is achieved in the Nordstrom Valve every time the plug is lifted by hydraulic pressure in the operation of the patented Nordstrom method of "Sealdport" Lubrication. This lifting of the plug separates the seating surfaces so that a uniform distribution of lubricant can be obtained. This not only seals the valve tight against leaks but also protects the metal surfaces against wear.

Cup grease should never be used in Nordstrom Valves. For the most efficient service, always use "Merco" Lubricant, prepared especially for Nordstrom Valves. There is a "Merco" Lubricant for every valve service and our engineers will gladly recommend the lubricant best adapted to your requirements.

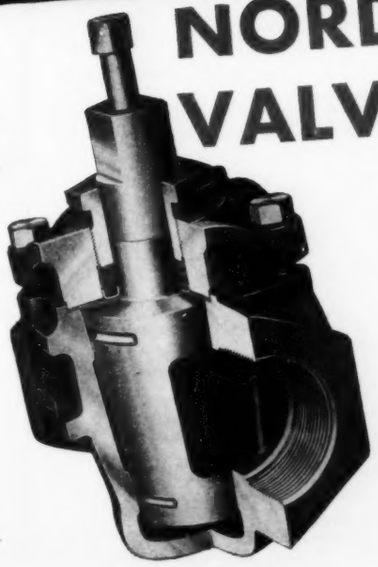
For tight pipe joints, always use "Merco" Pipe Compound. Easy to apply. Economical to use. Ask for latest Catalog.

ALL CHANNELS ARE LUBRICATED

VALVE IS SEALED TIGHT AGAINST LEAKS

METAL SURFACES ARE PROTECTED

NORDSTROM VALVES



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WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 45)

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 .....Shut down 1,645 ft.

KAY COUNTY

Wilright Gas Co.'s No. 1 Wildegrube, NE SW Sec. 14-27-1 .....Drlg. 1,830 ft.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 .....Location.
Peters & Buckles' No. 1 Hayes, NW NE NW Sec. 24-28-3 .....Drlg. 1,800 ft.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 5-27-2 .....Drlg. 2,170 ft.
Blackwell Oil & Gas Co.'s No. 1 Harshman, Sec. 2-26-1w..Rig on ground.
Boucher Oil Co.'s No. 1 Jefferson, NE SW Sec. 32-26-1w..Fishing 1,175 ft.

KINGFISHER COUNTY

Prairie and Slick's No. 1 Wright, C NW SW Sec. 23-15-5w .....T. D. 6,890 ft.; plugged back to 5,100 ft.; shot 80 qts. at 5,045-56 ft.; no show.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w .....Abandoned 7,931 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w .....Rig.

LATIMER COUNTY

Choctaw Gas' No. 1 Weaver, C NE NW Sec. 4-6-18.....Location.
Howard et al's No. 1 Holmes Inv. Co., SE SW NW Sec. 16-3-21 .....Fishing 350 ft.
Mid-Western's No. 1 Unknown, C SE NW Sec. 15-6-11 ...Drlg. 600 ft.
P. English's No. 1 Unknown, NW SE Sec. 16-6-19 .....Drlg. 300 ft.
Mid-Western Oil & Gas' No. 1 Bullo, C E half SW Sec. 3-6-19 .....Abandoned 2,755 ft.
LeFlore Oil Co.'s No. 1 McBee, NW cor. Sec. 3-7-21 .... Shut down 3,601 ft.

LINCOLN COUNTY

Mote-Wheeler's No. 1 Stafford, NW NE Sec. 32-17-4 ....Drlg. 2,350 ft.

LOGAN COUNTY

Eason Oil Co.'s No. 1 Young, C SW NE SW Sec. 34-17-4w.Sand 4,919-42 ft.; made 870 bbls. 21 hrs. and 485 bbls. the second 24 hrs.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 .....Wishing 5,682 ft.

MUSKOGEE COUNTY

Rebold's No. 1 Miller, SE NE NE Sec. 32-13-19 .....Rig.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 ....Shut down 1,011 ft.

NOBLE COUNTY

Barnsdall's No. 1 Miksch, NW SW Sec. 12-21-1 .....Drlg. 4,700 ft.

OKFUSKEE COUNTY

Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 .....Shut down 4,127-57 ft.; water; plugged back to 3,161-85 ft.; showing 10 bbls.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 .....Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 ..Shut down 3,690 ft.

OKLAHOMA COUNTY

L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w .....Shut down 5,515 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Messer, SW cor. Sec. 32-14-3w .....Wilcox 6,697-6,771 ft.; shot with 90 qts. and 140 qts.; made 2,627 bbls. 7 days; completed for 700 bbls.
Warr et al's No. 1 Castle, SW NW Sec. 20-11-3w .....Wilcox 7,347-7,450 ft.; water; abd.
J. F. Cuniff, trustee's No. 1 Church Land, NE SW SE Sec. 17-12-4w .....Shut down 6,700 ft.

OSAGE COUNTY

Millard & Stanley's No. 1, SE SW Sec. 4-28-7 .....Drlg. 1,327 ft.

PAWNEE COUNTY

Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5.....Shut down 1,800 ft.
Sperry et al's No. 1 Mulirap, SE SW Sec. 2-22-5 .....Shut down 1,740 ft.
L. E. Wentz' No. 1 G. Lilly, SE SW NE Sec. 26-22-3 ....Shut down 4,328 ft.
Cochran et al's No. 1 Green, NE cor. SW, Sec. 15-23-5 ..Rig.

PITTSBURG COUNTY

J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 .....Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 .....Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 .....Rig.

POTTAWATOMIE COUNTY

J. E. Crosbie et al's No. 1 Brown, NE NW SW Sec. 2-9-4 .....Rig.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w .....Drlg. 3,334 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w ....Shut down 2,905 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 35-5-5 .....Location.

STEPHENS COUNTY

Junior Oil Co.'s No. 1 Thompson, CNL SE SE Sec. 1-1-7w .....Drlg. 500 ft.
Ross Southard's No. 1 McKinney, NE cor. Sec. 25-1-8w..Shut down 1,063 ft.
G. Pace et al's No. 1 Pruitt, SW cor. SE Sec. 8-1-9w ....Drlg. 1,776 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w..Drlg. 896 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 .....Shut down 100 ft.
Petroleum Holdings, Inc.'s No. 1 Musie, NW cor. Sec. 10-9-20w .....Shut down 280 ft.

WOODWARD COUNTY

Farron-I et al's No. 1 Unknown, SE cor. SW SE Sec. 2-22-17w .....Abandoned 1,387 ft.
Prairie Oil & Gas Co. et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w .....Shut down 7,445 ft,

OKLAHOMA PANHANDLE

TEXAS COUNTY

Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-18 .....Shut down 4,425 ft.
Palo Alto Oil Co.'s No. 1 Graves, NE SW SW Sec. 23-2-18e .....Spudded; shut down.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Bryant et al's No. 1 Southern Trust, C SW SW Sec. 3-1s-14 .....Show oil 747-50 ft.; to test.
Stewart-Howland's No. 1 Howard, NW SE NW Sec. 6-4s-11 .....Shut down 100 ft.
Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 .....Shut down 400 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10..Shut down 620 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 .....Drlg. 690 ft.
Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-16s-7e ..Shut down 485 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 .....Drlg. 2,656 ft.

COTTON COUNTY

Gilbert-Lowery's No. 1 Harneg, C SE SE Sec. 4-2S-11w..Drlg. 400 ft.

JEFFERSON COUNTY

J. H. Brown et al's No. 1 Norlett, SW NW NE Sec. 35-7s-8w .....Drlg. 2,500 ft.

LOVE COUNTY

G. Pace et al's No. 1 Burkhart, NE NW Sec. 13-8s-1 ....Drlg. 1,706 ft.
Batson & Sterrette's No. 1 Dillard, SE NE NW Sec. 25-6s-2 .....Show 5 bbls. 1,585-96 ft.
Hobbs et al's No. 1 Roberts, NE cor. SW Sec. 20-6s-3w ..Shut down 3,130 ft.

MARSHALL COUNTY

D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-5s-5 ....Shut down 1,275 ft.
McCrory et al's No. 1 Adams, NE SW SE Sec. 31-7s-6 ..Shut down 530 ft.

McCURTAIN COUNTY

Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 .....Shut down 2,287 ft.

STEPHENS COUNTY

Andrea et al's No. 1 Patrick, C E half SE Sec. 3-3s-8w..Location.
Obermyer et al's No. 1 Skelton, NE SW SW Sec. 32-15-7w .....Shut down 1,375 ft.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 52)

Cosden Oil Co.'s No. 1 Stoltzfus, 2,310 ft. S and E lines of Sec. 14, Rangley Subd. of C. Miller ranch, Uranga Sur. .....T. D. 4,500 ft.; shut down.
Humble and Hurlbut et al's No. 1 J. C. Wood, 150 ft. from NW line, 1,144 ft. from SW line of P. T. Irrigation Co. .....T. D. 5,077 ft.; standing.
The Texas Company's No. 1 McCampbell, 150 ft. from N and E lines of 161-ac. tract, R. Pena Sur. .....Location.
Simms Oil Co.'s No. 2 Holzmark, 660 ft. N and 20° E of No. 1, T. York Sur. .....T. D. 4,458 ft.; perforating csg.
Rowan and Hope's No. 1 Goree, 600 ft. S, 300 ft. W Lot 4, T. B. Barton Sur. .....Rigging up.

BEXAR COUNTY

Eckert & Son's No. 3 J. J. Brehm, 545 ft. from N line, 150 ft. from W line of lease, Sur. No. 58 .....Location.
Bolling and Michael's No. 1 Adams, M. Gortaris Sur. ....Reinstated; T. D. 700 ft.; rigging up to deepen.
Gatlin Oil Co.'s No. 2 I. A. Beck, 150 ft. from SE line, 2,551 ft. from SW line of lease, J. Montez Sur. .....Location.
Kaye and Uhl's No. 1 Rhode, C. Texada Sur. No. 133 ..T. D. 665 ft.; drlg.; base Taylor.
Long and Craig's No. 1 Sandemer .....Location.
McElroy-Hall and Croach's No. 1 Sweeney, 450 ft. NW line, 700 ft. W line of tract, F. R. Hernandez Sur. ..Waiting on cement.
J. M. Russell's No. 1 F. L. Price, 1,500 ft. to N line, 660 ft. W of tract in Angel Navarro Sur. .....T. D. 932 ft.; show oil.
Snyder, Reeves et al's No. 2 Glasscock, 12 miles NE of San Antonio .....T. D. 802 ft.; shut down.
Weibacher et al's No. 1 Ernst, 6,400 ft. S line, 900 ft. W line of J. Christopher Sur. .....T. D. 720 ft.; shut down.
Somerset Syndicate's No. 1 Lagrange, 54 varas from S and W lines of Carrico tract, Sur. No. 48 .....T. D. 375 ft.; shut down.
J. E. Weatherall and Ben C. Hillman's No. 1 Talley ....Location.
Russell & Moore's No. 2 Mills, 20 ft. S of No. 1, Angel Navarro Sur. .....T. D. 1,136 ft.; shut down; repairing rig.
Ueckert et al's No. 1 Palfrey, 1,000 ft. S and W lines of farm .....T. D. 1,370 ft.; drlg. chalk.
S. M. Terrell et al's No. 1 A. Beadom, 1,100 ft. from E line, 12,000 ft. from N line of John Barber Sur. ..Location.
F. W. Tong's No. 1 Willie Sandemer, 150 ft. from NE and SE lines of the N 20 acres of Willie Sandemer 400-ac. tract, Juan Montez Sur. .....T. D. 1,170 ft.; shut down.
Bowman and Waldrop's No. 1 Ridder, 1,000 ft. from S and W lines of 688-ac. tract, J. M. Sur. .....T. D. 2,000 ft.; plugged back to 600 ft.; will put on pump.

CALDWELL COUNTY

Callihan et al's No. 3 W. H. Callihan, 70 ft. N, 65° E of No. 2 .....T. D. 2,525 ft.; shut down.
Cargil et al's No. 1 Thomas, 1,505 ft. from E line, 150 ft. from NE cor. of A. W. Jordan tract, J. Alberts Sur. .....T. D. 1,703 ft.; temp. abnd.
Jim Harper's No. 1 Tabor, Pablo Martinez Sur. .....Location.
Blount and Mills' No. 1 McMahan, 275 ft. from SW line, 75 ft. from SE line of 50-ac. tract, J. Pinchback Sur. .....T. D. 2,200 ft.; putting on pump.

COLORADO COUNTY

Lewis Slagel Drilling Co.'s No. 1 Henderson, 990 ft. from W line, 2,310 ft. from S line, Sec. 1, Blk. 57, T.&P. Sur. .....Location.
A. H. Eaton et al's No. 1 Sarcek, B. Schneider Sur. ....T. D. 849 ft.; drlg.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 5,894 Sur. .....T. D. 600 ft.; standing.

DEWITT COUNTY

Penn Oil Co.'s No. 1 Junker, C N half 20-ac. tract, Pettus Sur. .....T. D. 6,180 ft.; drlg.
H. T. Roe's No. 1 Leinhardt .....T. D. 2,170 ft.; shut down.
Sheldon Petroleum Co.'s No. 1 Goehring, center of Goehring tract, H. Stubblefield Sur. .....Dropped from report until drilling starts.

DUVAL COUNTY

Al Buchanan et al's No. 1 Wood-Welder, 1,500 ft. from W line, 500 ft. from N line of Sec. 215 .....T. D. 1,530 ft.; dry and abnd.
Gulf Prod. Co.'s No. 1 Shaeffer, J. Martinez Sur. .....T. D. 1,929 ft.; drlg.
Vacuum Oil Co.'s No. 1 Duval County Land Co., Sur. 280 .....T. D. 3,072 ft.; drlg.

EDWARDS COUNTY

Phillips Pet. Corp.'s No. 2 A. G. Holman, 320 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 .....T. D. 7,275 ft.; drlg.
James Dalgish's No. 2 Peterson, 550 ft. N line, 1,100 ft. W line of Sec. 82, Blk. E in the H.E.&W.T. Sur...Location.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 .....T. D. 560 ft.; drlg.
Kelly et al's No. 1 Burke .....T. D. 834 ft.; shut down.

FRIO COUNTY

A. H. Wray's No. 1 Burns estate, 700 ft. N, 330 ft. E of C Sec. 123, Antone Hupzor .....T. D. 3,708 ft.; show oil; will test.

GOLIAD COUNTY

A. G. Riemenschneider's No. 1 A. T. Fromme, 275 ft. from N line, 912 ft. W line of 300-ac. tract, P. Dexter Sur. .....T. D. 2 330 ft.; shut down.
Gibson Oil Co.'s No. 1 Cyrus Parks, 3,000 ft. S and 2,500 ft. E of NW cor. of Parks ranch, Ferguson Sur. .....T. D. 5,104 ft.; standing.
T. B. Slick's No. 1 Poetter, 1,500 ft. from SW line, 900 ft. from SE line of 591-ac. tract, Obid Marshall Sur. .....T. D. 4,213 ft.; shut in for storage.
T. B. Slick's No. 1 Allen, Obid Marshall Sur. .....Location.
Union Producing Co.'s No. 28 Ray, 150 ft. S and 800 ft. from W lines of 416-ac. tract .....T. D. 1,750 ft.; drlg.

GONZALES COUNTY

Andibus & Cummings' No. 1 R. D. and J. C. Miller, 523 ft. from S line, 1,000 ft. from E line, Ann Williams Sur. .....T. D. 2,550 ft.; shut down.
Acme Oil & Royalty Corp.'s No. 1 H. K. Weber, 2,625 ft. from NW line, 2,250 ft. from SW line, Wright Sur. .....T. D. 2 560 ft.; shut down.
Weal Oil Co.'s No. 1 Martin, 360 ft. SE line and SW line of tract, Thomas Moore Sur. .....T. D. 2,400 ft.; drlg.
United North & South's No. 2 Wells, 1,250 ft. SW of No. 1 .....T. D. 4,660 ft.; coring.

GUADALUPE COUNTY

Ray Oil Co.'s No. 1 R. Felsing, 300 ft. NW line, 450 ft. NE line 120-ac. tract in the M. Baker Sur. .....T. D. 1,004 ft.; dry and abnd.
O. K. Emerson's No. 1 C. A. Phillips, center of 80-ac. tract, Velda Sur. .....Rigging up.
Jones and Erwin's No. 1 O. Forrester, 2,700 ft. from NE cor., 450 ft. from NW line, O. Forrester tract, Pate Sur. .....T. D. 707 ft.; shut down.
Jones and Erwin's No. 1 Hoese, 150 ft. each way out of NE cor. of 200-ac. tract, J. Leal Sur. .....T. D. 691 ft.; shut down in Edwards.

HAYS COUNTY

Halley & Whittington's No. 1 Heidenrich, 4,900 ft. from NW line, 400 ft. from NE line of farm, Hemphill Sur. .....T. D. 2,395 ft.; drlg.
San Marcos Oil & Gas Co.'s No. 1 A. H. Alford .....T. D. 513 ft.; waiting on cement.

JIM HOGG COUNTY

Cole Petroleum Co.'s No. 1 Allen, 150 ft. from W line, 336 ft. from N line, Blk. 7, Sur. No. 23 .....T. D. 3,240 ft.; abnd.

J. D. Pulliam's No. 1 Jones, 1,020 ft. W line, 1,020 ft. S line, Share 5-A, Hinojosa Sur. ..... T. D. 2,888 ft.; standing.
P. H. Wilson's No. 1 Edds, Sur. 210 ..... T. D. 3,000 ft.; drlg.

JIM WELLS COUNTY

Prairie Lea Prod. Co.'s No. 1 Oppenheimer ..... T. D. 520 ft.; shut down.
Smith Clark Co.'s No. 1 Cuero Cattle Co. ..... Location.
Stewart and Blair's (E. W. Ogden) No. 1 Farris ..... T. D. 2,615 ft.; reinstated; cleaning out to deepen.

KARNES COUNTY

J. F. Morrissey et al's No. 1 Rigsdale, 660 ft. SW of C of NE line of 170-ac. farm in the McCoull Sur. ..... T. D. 2,000 ft.; standing.
A. Edmiston's No. 1 Cochran, 150 ft. from S line, 500 ft. from E line of tract, D. B. McConnell Sur. ..... T. D. 1,010 ft.; standing.
Hurlbut et al's No. 1 Newberry, 450 ft. SE and SW line of Newberry 428-ac. tract, Carlos Martinez Sur. .... T. D. 2,975 ft.; show gas.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ..... T. D. 1,010 ft.; drlg.
Sitten et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 1,130 ft.; drlg.
Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale ..... T. D. 2,410 ft.; drlg. lime.
J. B. Sterling's No. 1 R. J. McCrocklin, 1,350 ft. from N line, 250 ft. from W line of the B. G. Owens Sur., 4 miles W from Kendalia ..... T. D. 1,600 ft.; shut down.
R. M. Perkins' No. 1 J. Lawhorn, Sec. 10, 2,475 ft. E line, 1,488 ft. S line ..... T. D. 706 ft.; drlg.
Permian Oil Co.'s No. 1 Taylor, Sec. 18, G.B.&G. Sur. ..... T. D. 100 ft.; drlg.

KERR COUNTY

Evans et al's No. 1 Love Ranch, 100 ft. from S line Sur. 1,597, 1,000 ft. E of W line of J. Martinez No. 1,594 Sur. ..... T. D. 3,391 ft.; resetting csg.
Evans and Gant's No. 1 Selker-Mears, C.C.S.D.&R.G. N.G. Sur. No. 1,605 ..... Rigging up.
Evans and Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 ..... Location.

KINNEY COUNTY

Magnolia Pet. Co.'s No. 1 Whitehead-Wardlaw, 2,640 ft. W line and S line of Melton Valdez grant ..... T. D. 5,025 ft.; drlg.
Hardon Oil Co.'s No. 2 Jim Clamp ..... T. D. 1,389 ft.; standing.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ..... T. D. 850 ft.; standing.
Ramon et al's No. 1 Hodges ..... T. D. 1,609 ft.; drlg.

LASALLE COUNTY

Fred W. Valz' No. 1 Coleman, 200 ft. from S and E lines of SW Sec. 514, B.S.&F. Sur. ..... T. D. 40 ft.; standing.

LAVACA COUNTY

Cranfill & Reynolds' No. 1 Hermes, William Ryan Sur. .. T. D. 1,500 ft.; drlg.
Newton Oil Co.'s No. 1 Reeves, cor. of S line of Reeves tract, John Hueser Sur. ..... T. D. 2,340 ft.; fishing.

LIVE OAK COUNTY

Jacob, Buzzini & Pickett, Inc.'s No. 1 C. E. Kay in the Bridget Fadden Sur., 3 miles E from George West .. T. D. 3,245 ft.; drlg.
Houston Oil Co.'s No. 3 Dunning, 330 ft. from NE line and 2,800 ft. from SE line of tract, M. B. Kilvin Sur... Moving in derrick.
Houston Oil Co.'s No. 1 D. W. Snyder, 630 ft. from S line, 150 ft. from E line of Snyder tract, T. E. Garner Sur. ..... T. D. 5,386 ft.; coring.
Illinois Exploration Synd.'s No. 1 Reeves-Brown, 1,300 ft. S of Sellars tract, 1,800 ft. E of Ry. ..... T. D. 2,145 ft.; shut down.
Ed Keoughan's No. 1 C. E. Terrell, 6,000 ft. from N line, 1,000 ft. from E line, Dan O'Boyle Sur. ..... T. D. 2,840 ft.; shut down.
Tri-Tex Oil Co.'s No. 1 L. Jacobs, 4 miles from N of Callihan Field ..... T. D. 4,523 ft.; dry and abnd.

LEE COUNTY

Burt et al's (M. D. Rickett) No. 1 R. C. Sanders ..... T. D. 3,787 ft.; drlg.
Burts et al's No. 1 Thomas ..... T. D. 7,420 ft.; drlg.
J. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ..... T. D. 3,015 ft.; drlg.

McLENNAN COUNTY

J. E. Groone et al's No. 1 League ..... T. D. 932 ft.; shut down.
W. L. Murrel et al's No. 1 Hixon ..... T. D. 775 ft.; shut down.

McMULLEN COUNTY

Regal Pet. Co.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. ..... T. D. 632 ft.; standing.
Reese, Brodie and Emick's No. 1 Shiner, Henry Brewer Sur. ..... T. D. 1,030 ft.; drlg.

MAVERICK COUNTY

Arcade Oil Corp.'s No. 6 Chittim, 1,445 ft. from S, 320 ft. from W of Sec. 7, I.&G.N. Sur. ..... T. D. 3,787 ft.; drlg.
Arcade Oil Corp.'s No. 5 Sullivan, in C of Sec. 82, Blk. 7, in the I.&G.N. Sur. ..... T. D. 7,420 ft.; drlg.
Texas Gas Utilities Co.'s No. 7 Chittim, 5.70° E, 1,845 ft. from No. 3, I.&G.N. Sur. ..... T. D. 3,015 ft.; drlg.

MEDINA COUNTY

National Oil Co.'s No. 1 Howard, 1,750 ft. E of W line, 1,854 ft. N of S line of survey in the John George Sur. No. 9, 10 miles S of Dunlay ..... T. D. 2,561 ft.; coring.
A. H. Hickey's No. 1 Odon, H. Castro Sur. No. 175 ..... Spudded.
Donaldson Oil & Gas Co.'s No. 2 Adams ..... Derrick.
T. H. Florian et al's No. 1 Henry Meyer ..... T. D. 200 ft.; drlg.
Bidwell et al's No. 1 L. W. Burrell ..... T. D. 518 ft.; standing.
D. Eskridge et al's No. 1 Medina Valley Irrigation ..... T. D. 250 ft.; drlg.
Mt Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,550 ft. E line of survey, 487.6 miles W of Devine ..... T. D. 2,789 ft.; shut down.

MILAM COUNTY

Beubotham & Tate's No. 1 Johnson, 325 ft. from N line, 250 ft. from W line of 40-ac. tract, D. Robinson Sur. ..... T. D. 1,475 ft.; shut down.
Masters and Pomeroy's No. 1 Pluger, J. J. Acosta Sur. .. T. D. 40 ft.; set surface csg.
Greer, Roberts & Dibble's No. 2 Ward ..... T. D. 2,765 ft.; drlg.
Lloyd Oil Corp. and H. W. Elliott's No. 1 Davis ..... T. D. 1,300 ft.; abnd.
T. E. McKee et al's No. 1 Littleton, 150 ft. from N and 225 ft. from W lines of lease, C. Chevallier Sur. .... T. D. 100 ft.; shut down.
L. Moore's No. 1 Davis ..... T. D. 2,147 ft.; shut down.
Reggie Bros.' No. 1 M. Reed ..... T. D. 650 ft.; shut down.
Service Oil & Gas Co.'s No. 1 H. G. Hensiee, 500 ft. from NW line, 400 ft. from NE line of 50-ac. tract, Valdez Sur. ..... T. D. 2,180 ft.; standing.

NUECES COUNTY

Simm et al's No. 1 William Baur ..... T. D. 3,760 ft.; coring.
H. H. Weinert's No. 1 Mohle, 450 ft. from S line, 450 ft. from W line, Sec. 94, Bishop Subd., Palo Alto lands ..... T. D. 452 ft.; drlg.

REAL COUNTY

Evans & Sprinkle's No. 1 J. M. Auld, H.E.&W.T. Sur. No. 15 ..... T. D. 255 ft.; set 15½-in. csg.
McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 ..... T. D. 400 ft.; setting 15½-in. csg.
Hunt-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& R.G.N.G. Sur. No. 23 ..... Moving in rig.

STARR COUNTY

Los Olmos Oil Co.'s No. 2 Kelsey-Bass, Blk. 6, Porcion 77 ..... T. D. 269 ft.; standing.
Nash and Duerkson's No. 1 Kelsey-Bass, Blk. 9, Porcion 75, Carmargo Sur. ..... Drlg. 830 ft.
Shepyard et al's No. 1 Sealbury, 150 ft. from E line, 6,550 ft. from N line, Share 5, Porcion 75, Jurisdiction of Carmargo ..... T. D. 349 ft.; set 8-in. csg.

SAN PATRICIO COUNTY

George B. Pickett's No. 1 Baldwin, 900 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Neill Sur., Abstract 211 ..... T. D. 4,020 ft.; shut down.
Linden Oil Co.'s No. 1 Ramsey, 3,000 ft. from N line, 4,500 ft. from E line, Portilio Sur. ..... T. D. 4,118 ft.; dry and abnd.
Linden Oil Co.'s No. 1 Powell, 330 ft. E line of 36-ac. tract in Sec. 32, Paul Subd., Coleman-Fulton Pasture Lands ..... T. D. 4,600 ft.; drlg.
Planet Oil Co.'s No. 1 Carrol, 8 miles N of Gregory ..... Derrick

TRAVIS COUNTY

Fort Bend Oil Co.'s No. 1 Engleman, 450 ft. N line, 150 ft. W line of 108-ac. tract, J. H. Denson Sur. .... T. D. 790 ft. (corrected); shut down.
Bohls and Wilson's No. 1 Norton, J. Cole Sur. ..... Derrick.
E. R. Marts' No. 1 Voelker, 150 ft. N line, 150 ft. W line of tract, L. Kimbro Sur. ..... T. D. 1,300 ft.; shut down.

UVALDE COUNTY

Phantom Oil Co.'s No. 1 Claudt, Sec. 611 ..... T. D. 2,710 ft.; shut down.
Waldrop & Welch's No. 1 E. R. Edmonds, 1,750 ft. NW, 7,209 ft. W of Sec. 71, in the A. Gomez Sur., 8 miles S of Uvalde ..... T. D. 1,610 ft.; running csg.

VICTORIA COUNTY

Newton et al's No. 1 West ..... T. D. 1,550 ft.; standing.

WEBB COUNTY

Usher Carson et al's No. 3 Benavides, 150 ft. from S and W lines of Blk. 7, Sur. 1,613 ..... T. D. 600 ft.; drlg.
O. W. Killam's No. 1 Bruni, 2,490 ft. from E line, 1,170 ft. from S line of Sur. No. 77 ..... T. D. 2,933 ft.; testing.

WILSON COUNTY

Rycade Oil Corp. and Getty Petroleum Co.'s No. 1 J. A. Johnson, 150 ft. from N line, 600 ft. E of railroad tract, Jose de Balmaseda Sur. ..... T. D. 3,090 ft.; drlg.
Stover and Wrsn's No. 1 John Reuss, 10,400 ft. from SW line, 2,300 ft. from NW line, O. A. Trevino Sur. No. 19 ..... T. D. 1,100 ft.; fishing.

ZAPATA COUNTY

T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigging up.
John Poppas Pool, Inc.'s No. 1 Flores, 2,977 ft. SE line, 6,000 ft. Rio Grande River, Porcion 35 ..... Rigged up.
B. F. Nixon's No. 1 A. Guiterrez, 170 ft. S line, 332 ft. E line, Lot 5, Blk. 8, Partition 10, Borrego grant ..... T. D. 50 ft.; standing.
O. W. Killam's No. 3 Slator, Borrego grant ..... T. D. 1,510 ft.; drlg.
John J. O'Hern's No. 2 Benavides, Villa grant ..... T. D. 250 ft.; drlg.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Plk. 1, Sur. 2 ..... T. D. 1,929 ft.; drlg.
William Marks' No. 1 Flores, Blk. 36, Porcion 37 ..... T. D. 1,800 ft.; drlg.
National Oil Co. of Delaware's No. 1 Luther, 617 ft. NW line, 95 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 ..... T. D. 380 ft.; standing.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... Location.
Mackenzie and Talmadge's No. 1 Trevino, 400 ft. SE line, 200 ft. NE line, Blk. 6, Sur. No. 4, Porcion 2 and 3 ..... T. D. 562 ft.; shut down.

ZAVALA COUNTY

Carl Cromwell's No. 1 Whitecotton, C of NW Sec. 1, A.P.&M. Sur. ..... Location.
F. W. Weigand's No. 1 Gates, 1,320 ft. from N line, 220 ft. from NE cor., Sur. No. 13 ..... T. D. 2,215 ft.; shut down.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 46)

M. La Rue's No. 1 Tuffly, northwest ..... Gumbo 1,405 ft.; shut down.
Southern Coastal Oil Co.'s No. 2 Perkins ..... Standing sand and shale 2,752 ft.
Sun Oil Co.'s No. 18 Bender ..... Temporarily abandoned 4,872 ft.
Sun Oil Co.'s No. 19 Bender ..... Drlg. shale 4,406 ft.
Sun Oil Co.'s No. 1 Beck, west flank ..... Derrick.
Trapshooter Oil Co.'s No. 3 Rosenbaum ..... Shale 4,067 ft.; preparing to pump.
Trapshooter Oil Co.'s No. 10 Nell, northwest ..... Salt 1,806 ft.; sand showing oil 1,793-1,805 ft.; shut down.
E. M. Wilson's No. 6 Wheeler & Pickens ..... Comp. pumping 30 bbls. daily 1,501 ft.

PIERCE JUNCTION—HARRIS COUNTY

Gulf Prod. Co.'s No. 2 Manchester Corp. ..... Drlg. hard lime 3,939 ft.
Navarro Oil Co.'s No. 2 Perry ..... Drlg. gumbo 1,156 ft.
Rio Bravo Oil Co.'s No. 10-B Settegast (workover) ..... Pulling screen to deepen 3,575 ft.
Superior Oil Corp.'s No. 2 Boyles ..... No report.

BIG CREEK—FORT BEND COUNTY

Gulf Prod. Co.'s No. 61 Davis ..... Drlg. sand and shale 3,510 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 5 Lost Lake ..... Drlg. salt 6,305 ft.; top of salt 6,280 ft.

NASH—BRAZORIA COUNTY

Harrison & Abercrombie's No. 27 Wisdom ..... Sand 5,646-77 ft.; set 33 ft. 4½-in. screen and liner to top; estimated 500 bbls. daily.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 91 McFaddin (workover) ..... Oil sand 4,001 ft.; comp. flowing 450 bbls.
Yount Lee Oil Co.'s No. 145 McFaddin ..... Drlg. sticky shale 3,880 ft.

NORTH DAYTON—LIBERTY COUNTY

Harrison & Abercrombie's No. 1 Blewett ..... Flowed salt water 4,909 ft.; abd.
Harrison Oil Co.'s No. 4 Quintette (workover) ..... Total depth 6,077 ft. in salt; sidetracked and drlg. sticky shale 5,325 ft.

BATSON—HARDIN COUNTY

Ada Belle Oil Co.'s No. 145 Producers ..... Comp. pumping 152 bbls. fluid, 2 bbls. net oil 469 ft.

HIGH ISLAND—GALVESTON COUNTY

Gulf Prod. Co.'s No. 10 Smith ..... Total depth 6,018 ft.; sidetracked to 5,911 ft.; set 8 jts. screen; flowing estimated 2,500 bbls. pipe line oil on ¼-in. choke; pressure 1,300 pounds.
Marrs McLean's No. 12 Cade (workover) ..... Total depth 4,552 ft.; twisted off.
Marrs McLean's No. 20 Cade ..... Rig standing.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 28 Moore ..... Rig.

HULL—LIBERTY COUNTY

The Texas Company's No. 4 Barrow ..... Cmtd. csg. 4,026 ft.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 3 Elman ..... Drlg. sticky shale 1,106 ft.
Sun Oil Co.'s No. 4 Janner ..... Drlg. salt 4,528 ft.; top of salt 3,865 ft.
Sun Oil Co.'s No. 1 Freeman ..... Total depth 3,638 ft. in salt; plugged to sand 1,990 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Oil Co.'s No. 5 Esperson ..... Sand 6,707-6,711 ft.; blew in estimated 10,000,000 ft. gas and spraying 100 bbls. "gasoline" on ¼-in. choke, pressure 775 lbs.
Cranfill-Reynolds' No. 18 Esperson ..... Drlg. gumbo 1,900 ft.
Cranfill-Reynolds' No. 8 Moores Bluff ..... Spudded.
Cranfill-Reynolds Oil Co.'s No. 1-C Kirby fee ..... Drlg. sticky shale 4,412 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 1 Ezzel ..... Drlg. hard sand 6,958 ft.
Gulf Prod. Co.'s No. 11 Boyt ..... Drlg. gumbo 2,912 ft.

BOLING—WHARTON COUNTY

C. S. Thomas' No. 1 Volney ..... Standing shale 535 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 108-A Cotton ..... Set screen to test 457 ft.

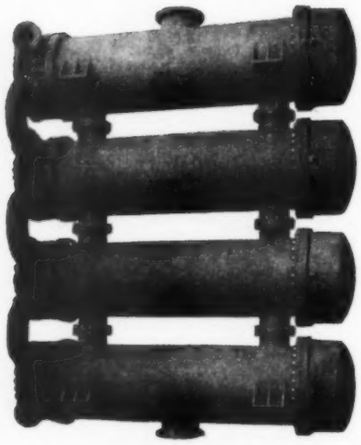
MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Gulf Production Co.'s No. 3 McFaddin, east flank ..... Drlg. hard sand rock 3,722 ft.
Humble Oil & Ref. Co.'s No. 2 Breeding, northwest flank. Building road to location.
Humble Oil & Ref. Co.'s No. 7 Sterling, east flank ..... Rig.
Humble Oil & Ref. Co.'s No. 2 Sergeant, east flank ..... Location.
Shell Petroleum Corp.'s No. 2 Herff, southeast flank ..... Drlg. hard sandy shale 6,575 ft.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 14 Pratt-Hewitt-Rooke ..... Trying to make drill stem test 3,620 ft.

Built of materials which resist corrosion



G-R Heat Exchangers

G-R Heat Exchangers are specially designed for individual service requirements, the materials of construction for each installation being carefully selected to withstand the operating conditions to be met.

For example, where corrosive liquids are to be handled, G-R Shelf-and-Tube Exchangers are equipped with a special stainless steel tubing which has been found capable of resisting a wider range of corrosive conditions than any other alloy. This is one of the many features which assure satisfactory service and minimum maintenance expense with G-R Equipment.

Many additional features, including high rate of heat transfer, compact construction, convenient installation, ease of operation, and high salvage value of each of the various types of G-R Heat Transfer Apparatus, have made them highly popular in oil refineries and throughout the chemical process industries. The sixty-year experience of The Griscom-Russell Company is at your service in the proper selection of equipment for your condensing, cooling and heat transfer processes.

Write for Bulletins

The Griscom-Russell Co., 285 Madison Ave., New York
Branches in principal cities.

G-R Heat Transfer Apparatus may now be fabricated with the new G-WELD which assures lasting strength and tightness and has received the unqualified approval of insurance companies. The trade mark G-WELD is always stamped on welds made by this process.

Griscom-Russell
Heat Transfer Apparatus

Houston Oil Co.'s No. 2 Rea (workover) ..... Flowed a little oil and went dead; pulling liner and screen 3,683 ft.
Houston Oil Co.'s No. 4 Mrs. M. H. Ryals ..... Drlg. gumbo 2,466 ft.
Houston Oil Co.'s No. 13 F. V. W. Heard ..... Drlg. sticky shale 3,022 ft.
Houston Oil Co.'s No. 1 Rooke ..... Sand 6,197-6,205 ft.; set 6⅝-in. csg. 6,191 ft.; drlg. plug.
Houston Oil Co.'s No. 1 Doughty ..... Sand 6,452-65 ft.; set 23 ft. screen, tested salt water; pulling screen.
Houston Oil Co.'s No. 1 O'Connor ..... Total depth 5,913 ft.; swabbed dry; to deepen.
Ed. Jones' No. 1 Kelly, Blk. 106 ..... Oil sand 6,451-54 ft.; cmtd. 6⅝-in. csg. 6,451 ft.
Ed Jones' No. 3 Mitchell, 200 ft. SW Mission River and 200 ft. SE of road in Blk. 13 ..... Cmtd. 12½-in. csg. 662 ft.
Luling Oil & Gas Co.'s No. 1 City, Blk. 86 ..... Cmtd. 12½-in. csg. 1,067 ft.
Luling Oil & Gas Co.'s No. 1 City, Blk. 105 ..... Drlg. sticky shale 6,035 ft.
Moody-Seagraves-Karona's No. 1 F. Kayser ..... Drlg. sandy shale 5,598 ft.
Moody-Seagraves Prod. Co.'s No. 6 Morgan-O'Connor .... Cmtd. 12½-in. csg. 1,264 ft.
Moody-Seagraves Prod. Co.'s No. 7 O'Connor ..... Drlg. shale 456 ft.
Moody-Seagraves and Phillips Pet. Co.'s No. 3-B J. F. B. Heard ..... Tested salt water 3,661 ft.; pulling screen.
Moody-Seagraves and Phillips Petroleum Co.'s No. 2 Mercy Academy, 167 ft. from N line and 666 ft. from E line of tract ..... Location.
Moody-Seagraves' No. 1-B O'Brien ..... Drlg. sticky shale and lime 4,290 ft.
Moody-Seagraves' No. 1-A O'Brien (workover) ..... Oil sand 6,450-60 ft.; set 15 ft. screen; comp. flowing 1,478 bbls. pipe line oil on 5/16-in. and ¼-in. chokes, pressure 1,175 lbs.
Moody-Seagraves Prod. Co.'s No. 3-A O'Brien ..... Oil sand 6,447-52 ft.; cmtd. 5 3/16-in. csg. 6,447 ft.
Moody-Seagraves Prod. Co.'s No. 1 Strauch, Blk. 64 (workover) ..... Pulling screen to deepen 5,629 ft.
T. P. Morgan's No. 1-B St. John heirs, 200 ft. from N line and 1,558 feet from E line of lease ..... Drlg. shale 2,275 ft.
Nichols Oil Co.'s No. 1 Wood ..... Standing 3,930 ft.
Saxet Oil Co.'s No. 6-A W. Heard (workover) ..... Broken sand and shale 3,661-67 ft.; fishing parted csg.
Saxet Oil Co.'s No. 1 L. H. Johnson, Blk. 11 ..... Location.
Sun Oil Co.'s No. 3 Rea ..... Set 22 ft. screen 3,651 ft.; swabbing.
L. L. Smith's No. 2 Rogers, James Power Sur. ..... Coring water sand 4,327 ft.
L. L. Smith's No. 1 L. M. Rogers, Blk. 87 ..... Sand 6,441-51 ft.; comp. flowing 650 bbls. daily on ¼-in. choke, pressure 1,900 lbs.
Traylor, Rutherford & Traylor's No. 1 Rogers heirs, James Powers Sur. ..... Salt water sand 3,703 ft.; shut down.
United Prod. Corp.'s No. 3 Fox (workover) ..... Rigging up to workover 3,675 ft.
United Prod. Corp.'s (Union) No. 11 Fannie Heard ..... Oil sand 4,872-80 ft.; to test.
United Prod. Corp.'s (Union) No. 12 Fann'e Heard ..... Location.
United Prod. Corp.'s (Union) No. 2 Moss-Powers, Blk. 109. Derrick.
United Prod. Corp.'s (Union) No. 5 O'Brien (workover).. Oil sand 6,451-57 ft.; cmtd. 5 3/16-in. csg. 6,448 ft.
United Prod. Corp.'s (Union) No. 7 O'Brien, Blk. 85 ..... Coring gas sand 6,420 ft.
United Prod. Corp.'s (Union) No. 8 O'Brien ..... Drlg. lime and shale 4,585 ft.
United Prod. Corp.'s (Union) No. 7 Powers ..... Location abandoned.
United Prod. Corp.'s (Union) No. 8 Powers, Blk. 82 ..... Drlg. gumbo and lime 5,576 ft.
United Prod. Corp.'s (Union) No. 6 Nancy J. Ryals ..... Oil sand 3,645-53 ft.; to test.
United Prod. Corp.'s (Union) No. 2-A Rose Lambert, 200 ft. out of SE cor., Blk. 1, of town tract ..... Location.
United Prod. Corp.'s (Union) No. 1 Shelton ..... Drlg. lime and sandy shale 6,340 ft.
United Prod. Corp.'s (Union) No. 1 J. Shay ..... Abandoned location.
United Prod. Corp.'s (Union) No. 5 Mitchell ..... Oil sand 6,431-46 ft.; cmtd. 5 3/16-in. csg. 6,432 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Martha Moss ..... Rig.
Vacuum Oil Co.'s No. 9 Bordages ..... Gumbo 1,264 ft.; cmtd. 13⅜-in. surface csg.
Vacuum Oil Co.'s No. 8 Farquahar ..... Oil sand 5,365 ft.; cmtd. csg.
Vacuum Oil Co.'s No. 12 Miller (workover) ..... Fishing 4,421 ft.
Vacuum Oil Co.'s No. 28 Miller ..... Total depth 5,623 ft.; sidetracked to sandy shale showing oil 3,816 ft.; set 1 jt. screen; swabbing.
Vacuum Oil Co.'s No. 31 Miller ..... Drlg. sticky shale 3,467 ft.

EDGERLY—CALCASIEU PARISH

Associated Oil Co.'s No. 5 Paraffine ..... Coring sand 3,456 ft.
Rex Petroleum Co.'s No. 8 Hunter ..... Drlg. hard sand 3,389 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 25 Watkins ..... Sand showing oil 2,837-46 ft.; to test.
Calcasieu Oil Co.'s No. 9 Valery ..... Total depth 3,137 ft.; plugged to 2,148 ft.; cmtd. 4½-in. csg. 2,138 ft.
R. E. Seiss' No. 2 J. M. Vincent ..... Shut down 510 ft.
The Texas Company's No. 8 State ..... Location.
Yount Lee Oil Co.'s No. 34 State ..... Location.
Yount Lee Oil Co.'s No. 36 State ..... Location.
Yount Lee Oil Co.'s No. 37 State ..... Location.
Yount Lee Oil Co.'s No. 38 State ..... Location.
Yount Lee Oil Co.'s No. 39 State ..... Location.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 9 Housierre Latrielle ..... Sand showing gas and oil 4,6[illegible] ft.; running csg.

VINTON—CALCASIEU PARISH

Vinton Pet. Co. (Lucky Ten) No. 1 Lizzo ..... Total depth 3,326 ft.; cutting and fishing 4½-in. liner and strainer.
Vinton Pet. Co.'s No. 10 Matilda Gray (workover) ..... Set 35 ft. 4½-in. strainer 3,66[illegible] ft.; bailed dry.
Wilson-Broach's No. 6 Wilson ..... Sandy shale showing oil 3,280 ft.; cmtd. 6⅝-in. csg.
Wilson-Broach's No. 7 Wilson ..... Drlg. rock 2,884 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Humble Oil & Ref. Co.'s No. 1 Woodyard Lake ..... Total depth 6,061 ft.; sidetracking hard sandy lime 5,139 ft.
Humble Oil & Ref. Co.'s No. 4 State ..... Total depth 4,477 ft.; sidetracking sand rock 4,048 ft.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w ..... Dredging canal to location.
Pure Oil Co.'s No. 10 Yount Lee ..... Drlg. lime 5,615 ft.

PORT BARRE—ST. LANDRY PARISH

Gulf Ref. Co.'s No. 4-A Hoskins ..... Drlg. sandy shale 3,546 ft.
The Texas Company's No. 9 Botney Bay ..... Spudded.

STARKS—CALCASIEU PARISH

Gulf Ref. Co.'s No. 26 Lutcher-Moore ..... Sandy shale 1,175 ft.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 19 United Land Co. ..... Building road to location.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 749 Fee (workover) ..... Rigged up to deepen 4,154 ft.
Union Sulphur Co.'s No. 762 Fee (workover) ..... Rigged up to deepen 4,789 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Arkansas Natural Gas Co.'s No. 1 Michemehl ..... Drlg. shale 3,951 ft.
Empire Gas & Fuel Co.'s No. 1 Kuntze, San Felipe ..... Drlg. sandy lime 5,663 ft.
O'Hara et al's No. 1 Schrader ..... Shut down 3,302 ft.

BRAZORIA COUNTY

The Texas Company's No. 1 Ewin, Harvey Little Sur. ..... Total depth 7,584 ft.; sidetracking 7,182 ft.
The Texas Company's No. 1 J. H. Murdock, Fresno ..... Abandoned 7,556 ft.
Mills Bennett Prod. Co.'s No. 3 Allen, Allen ..... Cap rock 1,389 ft.; losing returns.
Mills Bennett Prod. Co.'s No. 2 Reece, Allen ..... Drlg. hard sand 3,025 ft.
Mills Bennett Prod. Co.'s No. 2 Random, Allen ..... Drlg. hard sandy lime 2,494 ft.

RE-HEATED FOR UNIFORM STRENGTH . . .

Pittsburgh Seamless Casing (sizes 6⅝ O. D. and larger) is re-heated after piercing and rolling. This operation **normalizes** the grain structure, producing a tougher and more uniform product and removing any strains set up in previous operations . . . a distinct advantage in "Pittsburgh" Casing of regular A. P. I. grades and an absolute requirement for full safety in high tensile casing for deep wells.

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CASING

3017

Faust et al's No. 5 Faust ..... Drlg. shale 6,059 ft.
Freeport Sulphur Co.'s No. 2,001 fee, Bryan Heights..... Drlg. shale showing gas 4,885 ft.
Layne et al's No. 7-A Wisdom, Damon Mound ..... Drlg. shale 3,036 ft.
Amerada Pet. Corp.'s (Rycade) No. 2 Seaburn, Stratton Ridge ..... Drlg. shale 6,030 ft.
Steel & Strickland's No. 1 Lockbridge ..... Spudded and shut down.
United Oil Syndicate's No. 1 Speer, A. A. Talmadge Sur.. Shut down 732 ft.

BURLESON COUNTY

Mid-South Oil Co.'s No. 1 Duckworth ..... Drlg. sandy shale 2,597 ft.

CALHOUN COUNTY

The Texas Company's No. 1 Smith, J. P. Tilley Sur., Will Mousin and Driscoll Su ..... Derrick.

CHAMBERS COUNTY

Chicago Oil Corp.'s No. 1 Lawrence ..... Shut down 5,020 ft.

COLORADO COUNTY

A. H. Eaton et al's No. 1 A. R. Surcek ..... Drlg. gumbo 991 ft.

FORT BEND COUNTY

Long Point Oil Co.'s No. 1 Texas-Gulf fee, H.&T.C. Sur... Sand 625-29 ft.; bailed small amount of oil; shut down.

GRIMES COUNTY

Deering & Noble's No. 1 Templeton, 6 miles south of Navasota ..... Drlg. shale 3,687 ft.

HARDIN COUNTY

D. O. Speight's No. 1 fee, near Batson ..... Drlg. gumbo 3,356 ft.

HARRIS COUNTY

Cypress Oil & Development Co.'s No. 2 Kitzman ..... Abandoned in shale 4,430 ft.
Gulf States Oil Co.'s No. 1 Angsperger ..... Shut down 3,928 ft.
Humble Oil & Ref. Co.'s No. 1 Gehring, Mykawa..... Sand 4,873 ft.; 30 ft. 7-in. (O.D.) screen set with csg. 4,870 ft.; swabbing.
Humble Oil & Ref. Co.'s No. 4 Minnetex, Mykawa..... Total depth 5,258 ft.; reaming to set csg.
Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 251, Wm. Lovett Sur. ..... Location.
Sloane Prospecting Co.'s No. 1 Ulrich, Cedar Bayou..... Drlg. gumbo 1,126 ft.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover) ..... Rig up to deepen 3,662 ft.
Chicago-Gulf Co.'s No. 2 Lee ..... Total depth 4,147 ft.; set 1 jt. screen 4,105 ft.; swabbing.
Warner-Quinlan's No. 1 Hungerford, Henry Smith Sur.. Drlg. sandy shale and lime 2,380 ft.

JEFFERSON COUNTY

Humble Oil & Ref. Co.'s No. 1 McFaddin, T.&N.O. Sur. 234 Shale 1,940 ft.; cmtd. csg.
Keith et al's No. 1 Reed-Hankamer ..... Shale 2,042 ft.; shut down.
The Texas Company's No. 4 Pipkin, Big Hill ..... Total depth 4,123 ft.; sidetracking in sand rock 3,346 ft.

LIBERTY COUNTY

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.
J. R. Ingram's No. 1 Hornbeck, Clayton, Harper Sur.... Drlg. water sand 1,725 ft.
Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Gumbo 560 ft.; shut down.

MATAGORDA COUNTY

H. C. Cockburn's No. 2 Hawkins, Shepherds Mott..... Total depth 5,244 ft.; sidetracking in shale and lime 4,043 ft.
Empire Gas & Fuel Co.'s No. 1 Baker, Citrus Grove..... Total depth 6,295 ft.; cmtd. back to 5,480 ft.

MONTGOMERY COUNTY

Lake Creek Oil Co.'s No. 1 Hunt, south of Conroe..... Shut down 678 ft.; gumbo.
Price & Whitehead's No. 2 Guerges ..... Shut down 2,956 ft.

NACOGDOCHES COUNTY

E. L. Burk et al's No. 1 Latimer, Jose De Los Santos Sur. ..... Shut down 4,225 ft.

ORANGE COUNTY

Gulf Production Co.'s No. 1 Miller Vidor Lbr. Co., E. Lewis Sur. No. 385 ..... Drlg. gumbo 2,516 ft.
Crew Oil Co.'s No. 1 Mansfield ..... Location.

POLK COUNTY

Sunshine Oil Co.'s No. 1 Collins, A. Viescha Sur..... Set 92 ft. 4½-in. screen 3,323 ft.; 150 ft. oil in hole; shut down waiting orders.

SAN JACINTO COUNTY

E. P. Edwards et al's No. 1 Bennett, northwest of Cold Springs ..... Spudded.

VICTORIA COUNTY

Newton et al's No. 1 West ..... Shut down 1,550 ft.
The Texas Company's No. 2 McFaddin, C. M. B. Hoyd Sur. ..... Rig.

WASHINGTON COUNTY

Penn-Tex Oil Co.'s No. 2 Kainas Brenham, S. M. Williams Sur. ..... Spudded and shut down.
Vegua Oil Co.'s No. 1 P. Graves, S. Clampet Sur.. ..... Derrick.
Oliver Drlg. Co.'s No. 1-A Hahn, J. H. Alcorn Sur. A-3.. Coring sand 1,352 ft.

WHARTON COUNTY

Shibe & Gray's (Hearte Oil Co.) No. 1 Brown, El Campo.. Total depth 2,814 ft.; tested dry 2,662 ft.; shut down.
H. H. Givans' No. 2 Hudgins ..... Rig.

SOUTH LOUISIANA

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w..... Shut down 875 ft.
J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w..... Set 6⅝-in. csg. with 172 ft. 6⅝-in. screen on bottom, 6,568 ft.
Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w..... Drlg. shale 3,259 ft.
Dr. Thomas et al's No. 1 John Hewitt ..... Location.
Vacuum Oil Co.'s No. 1 Wait, Iowa ..... Sandy shale showing oil 5,001-08 ft.; set 1 jt. screen; tried to blow out; blowing 4 jts. drill pipe out of hole; repairing derrick.

CAMERON PARISH

Shell Petroleum Corp.'s No. 3 State, Black Bayou..... Drlg. sticky shale and lime 2,257 ft.
Shell Petroleum Corp.'s No. 16 Watkins, Black Bayou.... Coring sandy shale 3,444 ft.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Total depth 5,171 ft.; set 1 jt. screen 3,850 ft.; comp. 400,000 ft. gas and 100 bbls. fluid, 2% oil.
The Texas Company's No. 6 State, Calcasieu Lake..... Gyp 3,777 ft.; salt 2,399-3,667 ft.; set 6⅝-in. csg. 3,672 ft.; drilled plug; losing returns.
The Texas Company's No. 7 State, Calcasieu Lake..... Location.

IBERIA PARISH

The Texas Company's No. 6 Vermillion Bay..... Trying to set 10-in. csg. 884 ft.
Jefferson Lake Oil Co.'s No. 10 Lake Peigneur, Jefferson Island ..... Total depth 1,700 ft.; waiting on cement to set.
Jefferson Lake Oil Co.'s No. 10 Peigneur, Jefferson Island ..... Driving piling.

IBERVILLE PARISH

Gulf Ref. Co.'s No. 1 Gay, Bayou Choctou ..... Total depth 3,410 ft.; cmtd. 13⅜-in. csg. 670 ft.
Shell Pet. Corp.'s No. 5 Wilbert, White Castle ..... Coring hard lime 5,282 ft.
Standard Oil Co.'s No. 7 Wilbert, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 8 Wilbert, Bayou Des Glaise..... Drlg. sand rock 4,032 ft.
Standard Oil Co.'s No. 9 Wilbert, Bayou Des Glaise..... Piling capped.
Standard Oil Co.'s No. 2 Case, Bayou Des Glaise..... Location.
Standard Oil Co.'s No. 1 E. B. and S. P. Schwing, Bayou Blue ..... Drlg. gummy shale and lime 5,220 ft.
Standard Oil Co.'s No. 1 Baist Cooperage, Bayou Blue... Rig.

JEFFERSON DAVIS PARISH

H. T. McClain et al's No. 1 Trimble Atterbury, Welsh, Sec. 16-9s-5w ..... Drlg. gumbo 3,659 ft.

LA FOURCHE PARISH

The Texas Company's No. 2 Leesville ..... Location.

PLAQUEMINES PARISH

Gulf Ref. Co.'s No. 2-B Buras Levee Board ..... Drlg. sand rock 1,534 ft.
Humble Oil & Ref. Co.'s No. 2 Cockrell-Moran, Lake Grand Ecaille ..... Drlg. shale 4,295 ft.
The Texas Company's No. 4 State, Garden Island..... Drlg. shale 5,032 ft.
The Texas Company's No. 5 State, Garden Island..... Location.

ST. JAMES PARISH

Convent Oil Co.'s No. 2 Jacobs, Sec. 28-11s-4e..... Tested salt water 1,834 ft.; pulling screen.

ST. MARTIN PARISH

Harrison & Abercrombie's No. 1-A Barras, Sec. 66-11s-5e.. Drlg. gumbo 3,448 ft.
The Texas Company's No. 3 Iberville Land ..... Drlg. sandy shale and lime 3,905 ft.
The Texas Company's No. 4 St. Martin, Hager ..... Derrick.
The Texas Company's No. 5 St. Martin, Hager ..... Drlg. salt 3,517 ft.; top of salt 3,450 ft.

ST. TAMMANY PARISH

Washington-St. Tammany's No. 2 Cossack, Sec. 5-6s-10e. No report; previously reported depth 1,700 ft.

TANGIPAHOA PARISH

Joan Development Co.'s No. 1 Lake Superior, Sec. 20-5s-9s, 540 ft. E. 675 ft. N of SW cor. ..... Trying to make drill stem test 3,016 ft.

TERREBONNE PARISH

Paggi Brothers' No. 2 Evergreen ..... Total depth 1,800 ft., gumbo; set 900 ft. of 6-in. csg.
United Prod. Corp.'s No. 9 Minor, Houma ..... Total depth 4,014 ft.; tested dry; standing.
The Texas Company's No. 1 L.L.&E., Bay St. Elaine..... Drlg. gumbo 1,310 ft.
The Texas Company's No. 4 State, Caillous Island..... Driving piling.
The Texas Company's No. 6 State, Caillou Island ..... Location.
The Texas Company's No. 5 State, Bay St. Elaine..... Salt 1,463-1,663 ft.; waiting orders.
The Texas Company's No. 6 State, Bay St. Elaine..... Location.
The Texas Company's No. 4 State, Dog Lake..... Location.
The Texas Company's No. 5 State, Four Isle ..... Location.
The Texas Company's No. 2 La. L. & E., Bay Junop..... Drlg. sand rock 6,898 ft.
The Texas Company's No. 3 La. L. & E., Bay Junop..... Location.
The Texas Company's No. 4 La. L. & E., Bay Junop..... Location.
The Texas Company's No. 6 State, Lake Barre..... Location.
The Texas Company's No. 7 State, Lake Barre..... Set 46 ft. 4-in. screen 3,820 ft.; comp. flowing 1,800 bbls. on ¼-in. choke, 550 lbs. pressure; flow increased to 2,183 bbls.
The Texas Company's No. 8 State, Lake Barre..... Drlg. hard sand 4,000 ft.
The Texas Company's No. 9 State, Lake Barre..... Driving piling.
The Texas Company's No. 5 State, Lake Pelto..... Location.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Southwest, Louisiana Land Co., Gueydan ..... Drlg. shale 2,564 ft.

WEST FELICIA PARISH

Putnam Syndicate's No. 1 Como Plantation, Sec. 51-1e-4w. Total depth 3,738 ft.; shut down.

WILDCAT OPERATIONS IN MISSISSIPPI

CLAY COUNTY

Company, farm and location—	Remarks—
Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5 ...	Rigging up with cable tools; T.D. 2,835 ft; hard lime.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor., Sec. 20-13-3 ..... S.D. 1,700 ft.

COVINGTON COUNTY

United Prod. Co.'s (was S. P. Borden et al's) No. 1 McIntosh, 330 ft. S, 330 ft. W. NE cor. SW NE., Sec. 5-8-16 ..... Drlg. gumbo 2,250 ft.
Miss. Gulf O. & G. Co.'s No. 1 Pope, 200 ft. N, 200 ft. W. SE cor. W½ NW NE, Sec. 35-8-16 ..... Drlg. shale 2,750 ft.

GRENADA COUNTY

Carter-Pace's No. 1 Dubard (was F. E. West et al's), NW NW, Sec. 18-22-4 ..... Began drlg. Jan. 7; setting csg. cut off artesian flow, 350 ft; T.D. 650 ft.

HINDS COUNTY

Atkisson & Dyer's No. 1 Downing et al, SE NE, Sec. 27-6-1 ..... Rigging up.
Cane River O. & G. Co.'s No. 1 Kabbles, NE cor. SW SW, Sec. 15-5-1e ..... Cmtd. cavity 3,270 ft; in red beds.
Gulf Ref. Co.'s No. 1 McLaurin, 1,230 ft. S, 1,410 ft. W, NE cor., Sec. 30-6-2e ..... Cored chalk 2,485-90 ft; bailing to test.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e ..... Began drlg. Dec. 22; cmtd. one joint 12½-in; shut down.
Jackson Oil Co.'s No. 1 Central Cotton Oil Co., NW cor SW NW, Sec. 3-5-1e ..... Rig up.
Miss. Pet. Co.'s No. 1 Solvent Inv. Co., NE cor. NE SW SW, Sec. 14-5-1w ..... Fishing 3 jts. D.S; T.D. 3,042 ft.
Tri-State O. & G. Co.'s No. 1 Wilson, 320 ft. E. 240 ft. N, SW cor. SE NE, Sec. 23-6-1e ..... Began drlg. Dec. 22; S.D. 20 ft.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keys, C NW NE, Sec. 21-2-10.. Began drlg. Dec. 16; cmtd. 15½-in. 104 ft.

LAFAYETTE COUNTY

Banks-Good et al's No. 1 May, 113½ rds. S, 26 rds. E. NW cor, SW, Sec. 22-10-1w ..... Derrick.

MADISON COUNTY

Central O. & G. Co.'s No. 1 Cameron, 200 ft. W, 200 ft. N, SE cor., Sec. 11-9-1e ..... Arranging to cmt. 6⅝-in. 1,532 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19..... Arranging shoot; T.D. 2,400 ft.
Amory Pet. Co.'s No. 1 Harris, SW cor. SE SE, Sec. 18-13-17 ..... Rig up.
Associated Oil Co.'s No. 1 School, SW cor. SW SE, Sec. 16-15-17 ..... S.D; W.O. 32 ft.
Park Bowser et al's No. 1 Cowart, second hole, Sec. 2-12-19 ..... Drlg. lime 1,241 ft.

NESHOBA COUNTY

Collins et al's No. 1 J. M. Carter, SE SE, Sec. 29-11-12.... Rig up.
Ganzel et al's No. 1 Stallings, 280 ft. S. 280 ft. E. NW cor. NE NE, Sec. 25-5-1e ..... Coring 2,410 ft.

RANKIN COUNTY

R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e.. S.D. 900 ft.
Cleve Love's No. 1 Muse, SE cor. SW SW, Sec. 32-7-4e .... S.D.; repairs 1,245 ft.
Love Pet. Co.'s No. 1 Moore (was Interior Oil Co.'s), 660 ft. N, 660 ft. W, SE cor. NW NW, Sec. 28-6-2e S.D. 900 ft.
Millstein O. & G. Co.'s No. 1 Gammill-Hartsfield, 400 ft. E, 400 ft. N, SW cor. SW SE, Sec. 6-5-2e ..... 200 ft. fluid; 50 ft. oil 2,503 ft; W.O.
Jackson Royalties, Inc.'s No. 1 Pate, NE cor. NE SE, Sec. 12-5-1e ..... Began drlg. Oct. 5; cmtd. 12½-in. 280 ft; drlg. shale 2,120 ft.
Cleve Love et al's No. 1 Brown, C NW SE, Sec. 12-5-1e.. Began drlg. Oct. 9; drlg. 1,300 ft.
Pearl River O. & G. Co.'s No. 2 Pate, SE cor. SW SE, Sec. 12-5-1e ..... Began drlg. Oct. 7; cmtd. 10-in. 292 ft.

WARREN COUNTY

Dixie Pet. Co.'s No. 1 Clark, 300 ft. E. 660 ft. S, NW cor., Sec. 31-17-5 ..... Drlg. 220 ft.
Raymond A. Moore et al's No. 1 Clark, SE, Sec. 31-16-5 (no check) ..... Derrick.
Vicksburg Oil Co.'s No. 1 Dornbush, 2,080 ft. S, 1,520 ft. W, NE cor., Sec. 8-18-5 ..... S.D. 1,600 ft.

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Scarbrough, NW cor., Sec. 15-12-14. Cored sandy gumbo 1,968 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 285 ft. N, C, Sec. 14-11-4 ..... Drlg. shale 2,100 ft.

Exports Affected By Market Changes

Decline in Shipments Out of New York. Russian and Rumanian Competition Factor, Also Refineries Abroad

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Jan. 24.—Substantial declines in export movement of principal refined petroleum products were recorded locally during 1930, the shipments out of New York registering important reductions on gasoline, naphtha, kerosene, fuel oil, refined petroleum, lubricating grease and paraffin wax, with increases recorded in lubricating oil and petrolatum exports.

East Coast refiners suffered substantially by the revolutionary changes in world marketing conditions which developed during the year, and, while an optimistic note is heard regarding the outlook for 1931, it appears, on sober analysis, that the refining industry in this section of the country has probably witnessed the peak movement of its products into foreign markets for some years to come and that California and the Gulf will continue to absorb much of the business which formerly reached the Atlantic Seaboard, with South American, Rumanian and Russian refiners continuing as the principal usurpers in markets formerly dominated by eastern refiners.

There have been numerous radical changes in world petroleum market conditions during 1930 which have been responsible for the falling off in export volume handled by East Coast refiners, and these changes promise to continue to react to the disadvantage of the refining industry in this area. Among these changes, of course, increasing competition from South America, Russia and Rumania are the outstanding factors, but the building up of home refining industries in Germany, Spain, France and other countries, with the development of crude production in foreign countries to supply these new refineries, has all had its share in cutting into the export volume handled in the East, and promises to make still further inroads into export business in this territory.

Efforts of Export Association

Notwithstanding the nominal control exercised over the export markets at the Gulf and in California during the greater part of 1930 by the now inactive Export Petroleum Association, Inc., there were considerable quantities of distressed gasoline, naphtha and kerosene thrown on the market during the year, both at the Gulf and in California. These surplus products were marketed in a manner that circumvented the export association and the successful operations of the marketers handling these distressed products was responsible in no small measure in breaking down the cohesion among principal refiners which led to the abandonment of any attempt to correct the situation by the association. The marketing of these distressed products naturally reacted strongly against export sales by eastern refiners during the year, and considerable quantities of gasoline which in other years would have moved from New York and other eastern ports went into export channels through New Orleans and other ports adjacent to the Gulf.

As the new year gets under way, nothing "official" is known relative to the status of the export association. In some quarters, it is reported that 1931 will witness the final winding up of the group, while other reports have it that the association will remain dormant until world market conditions in the petroleum industry show signs of improvement, when the organization will be revived, and, in closer harmony with other world petroleum groups, will re-enter the American oil industry as the guiding factor in exporting operations.

The foreign marketing body organized during 1929 by Royal Dutch-Shell, Anglo-Persian Oil, and Burmah Oil companies functioned satisfactorily during the past year and during the greater part of 1930 this group worked in harmony with the American association.

Russian and Rumanian Competition

Continued expansion in Russian production of refined products last year, coincident with the modernization of the Russian refining industry with the aid of American equipment and technicians as part of the Soviet's "Five-Year Plan," brought about a heavier flow of Russian refined petroleum into world markets. The extent of Russia's expansion in this direction was forcibly brought to the attention of the American oil industry when a cargo of Russian naphtha arrived at Baltimore during the fall. This cargo was hailed as the forerunner of regular shipments of Russian gasoline into the United States, but to date no further arrivals have been reported, although it is reported that plans have been made for the resumption of shipments to this country.

Rumania forged strongly to the front as a factor in world marketing operations during 1930. Numerous cargo inquiries which were submitted to suppliers in the American Gulf market were withdrawn during the year when Rumanian suppliers underbid the American sellers and took away the business. The outstanding development in Rumanian marketing during the year was the action of a marketing group in that country in closing a contract with the Spanish Petroleum Monopoly for more than 50 per cent of Spain's requirements during 1931, with options for renewals of this contract in 1932 and 1933. Thus, Rumania has supplanted Russia as the principal supplier of refined products in Spain, and has to some extent displaced American com-

A COMPARISON OF EXPORTS OF REFINED PETROLEUM PRODUCTS FROM NEW YORK BY QUARTERS FOR 1930 AND THE PREVIOUS YEAR

Gallons

	First quarter		Second quarter		Third quarter		Fourth quarter		Total	
	1930	1929	1930	1929	1930	1929	1930	1929	1930	1929
Gasoline	5,269,000	7,790,150	4,109,000	5,762,800	4,170,000	5,314,100	3,233,000	4,048,100	16,781,000	22,915,150
Naphtha	14,732,000	16,087,500	7,330,000	16,425,900	7,070,000	14,625,800	7,665,000	8,334,600	36,797,000	55,473,800
Kerosene	2,552,000	6,466,300	2,438,000	4,010,300	2,351,000	2,834,300	2,843,000	2,045,300	10,184,000	15,356,200
Fuel oil	672,000	492,100	1,482,000	1,570,400	1,805,000	860,700	1,427,000	3,693,400	5,386,000	6,616,600
Lubricating oil	24,107,000	28,864,400	21,286,000	23,111,800	26,484,000	19,419,500	24,122,000	20,996,800	95,999,000	92,392,500
Petroleum, refined	20,020,000	21,778,400	15,008,000	21,833,400	13,096,000	16,229,900	13,326,000	19,685,100	61,450,000	79,526,800

Pounds

	First quarter		Second quarter		Third quarter		Fourth quarter		Total	
	1930	1929	1930	1929	1930	1929	1930	1929	1930	1929
Petrolatum	609,000	273,900	482,000	209,000	266,000	186,500	391,000	458,200	1,748,000	1,127,600
Lubricating grease	15,008,000	16,405,100	12,831,000	14,435,200	11,507,000	14,367,100	10,900,000	13,835,200	50,246,000	59,042,600
Paraffin wax	19,318,000	21,818,700	14,554,000	14,835,900	15,442,000	19,390,700	27,010,000	25,464,300	76,324,000	81,509,600
Crude scale	8,472,000	8,225,100	7,322,000	3,174,500	5,033,000	4,197,200	7,436,000	6,856,700	28,263,000	22,453,500
Refined	4,542,000	68,700	2,166,000	1,394,200	1,461,000	1,559,400	3,675,000	1,810,500	11,844,000	4,832,800

EXPORTS FROM NEW YORK

A Weekly Summary of Exports of Principal Refined Products From New York During the Past Year

Week ended—	Gasoline	Naphtha	Kerosene	Fuel oil	Lub oil	Pet. ref.	Petrolatum	Lub grease	Paraffin wax	Crude scale	Ref. wax
January 4	430,000	1,395,000	620,000	70,000	1,337,000	830,000	12,000	415,000	360,000	595,000	.....
January 11	130,000	1,130,000	53,000	23,000	1,385,000	2,022,000	196,000	1,075,000	2,215,000	1,085,000	.....
January 18	870,000	1,970,000	315,000	38,000	1,841,500	3,687,000	19,000	1,635,000	1,698,000	1,185,000	187,000
January 25	900,000	825,000	25,000	125,000	3,410,000	1,725,000	.....	1,620,000	2,205,000	812,000	1,300,000
February 1	468,000	975,000	410,000	30,000	2,395,000	831,000	.....	765,000	2,660,000	264,000	831,000
February 8	171,000	625,000	5,000	8,000	1,305,000	1,575,000	46,000	945,000	956,000	520,000	970,000
February 15	450,000	710,000	6,000	8,000	2,615,000	855,000	30,000	660,000	366,000	117,000	459,000
February 22	77,000	3,650,000	730,000	300,000	680,000	415,000	21,000	554,000	1,650,000	488,000	18,000
March 1	280,000	1,665,000	127,000	35,000	1,272,000	3,015,000	184,000	875,000	2,040,000	1,435,000	560,000
March 8	255,000	.....	12,000	6,000	960,000	1,590,000	54,000	1,340,000	2,068,000	241,000	180,000
March 15	325,000	710,000	125,000	.....	2,790,000	1,920,000	.....	1,598,000	730,000	630,000	12,000
March 22	470,000	787,000	78,000	13,000	2,485,000	690,000	15,000	2,291,000	1,590,000	395,000	25,000
March 29	443,000	290,000	46,000	16,000	1,632,000	865,000	32,000	1,235,000	780,000	685,000	.....
April 5	795,000	1,521,000	205,000	17,000	2,090,000	2,255,000	159,000	1,775,000	910,000	660,000	.....
April 12	355,000	1,065,000	220,000	55,000	1,416,000	1,425,000	14,000	1,250,000	1,920,000	1,350,000	74,000
April 19	211,000	260,000	153,000	27,000	1,530,000	973,000	66,000	1,022,000	888,000	180,000	10,000
April 26	505,000	3,000	1,200,000	257,000	4,836,000	210,000	.....	700,000	1,686,000	142,000	4,000
May 3	220,000	964,000	50,000	10,000	1,240,000	1,758,000	38,000	1,095,000	1,050,000	1,125,000	846,000
May 10	61,000	847,000	41,000	120,000	1,479,000	1,527,000	59,000	1,045,000	1,588,000	961,000	.....
May 17	180,000	686,000	19,000	485,000	1,219,000	505,000	.....	316,000	590,000	875,000	.....
May 24	440,000	246,000	15,000	10,000	1,240,000	1,204,000	11,000	1,175,000	533,000	406,000	932,000
May 31	322,000	21,000	200,000	72,000	1,153,000	210,000	21,000	850,000	1,153,000	535,000	.....
June 7	50,000	335,000	255,000	130,000	2,100,000	650,000	.....	420,000	640,000	562,000	5,000
June 14	130,000	535,000	33,000	109,000	903,000	2,326,000	35,000	1,603,000	1,611,000	223,000	.....
June 21	590,000	105,000	12,000	10,000	895,000	1,040,000	54,000	725,000	1,065,000	302,000	.....
June 28	250,000	745,000	35,000	180,000	1,180,000	925,000	25,000	845,000	920,000	.....	295,000
July 5	325,000	45,000	10,000	53,000	405,000	510,000	.....	1,225,000	935,000	490,000	.....
July 12	395,000	585,000	155,000	30,000	2,417,000	1,325,000	150,000	825,000	1,805,000	60,000	50,000
July 19	590,000	3,060,000	25,000	936,000	4,505,000	1,150,000	5,000	940,000	950,000	330,000	25,000
July 26	130,000	.....	42,000	10,000	1,345,000	200,000	7,000	675,000	1,200,000	100,000	200,000
August 2	115,000	.....	280,000	110,000	2,920,000	875,000	8,000	875,000	840,000	1,225,000	.....
August 9	725,000	90,000	50,000	145,000	1,867,000	2,693,000	.....	965,000	1,275,000	285,000	225,000
August 16	470,000	920,000	400,000	20,000	2,180,000	575,000	.....	790,000	790,000	390,000	25,000
August 23	480,000	.....	25,000	48,000	950,000	400,000	12,000	540,000	510,000	140,000	15,000
August 30	55,000	530,000	500,000	120,000	3,485,000	300,000	.....	875,000	1,100,000	230,000	420,000
September 6	125,000	470,000	44,000	.....	1,050,000	848,000	22,000	1,117,000	561,000	260,000	36,000
September 13	80,000	245,000	150,000	28,000	2,150,000	1,195,000	27,000	930,000	1,096,000	75,000	75,000
September 20	285,000	475,000	250,000	175,000	1,860,000	1,325,000	.....	900,000	3,025,000	1,248,000	.....
September 27	385,000	650,000	420,000	130,000	1,350,000	1,700,000	35,000	850,000	1,355,000	200,000	390,000
October 4	625,000	475,000	150,000	195,000	3,165,000	2,590,000	.....	1,125,000	2,220,000	1,125,000	.....
October 11	150,000	610,000	265,000	12,000	4,000,000	2,295,000	190,000	960,000	2,150,000	780,000	490,000
October 18	175,000	425,000	20,000	230,000	1,185,000	436,000	.....	650,000	3,160,000	25,000	.....
October 25	120,000	85,000	8,000	210,000	1,050,000	475,000	.....	910,000	2,620,000	1,150,000	205,000
November 1	125,000	360,000	7,000	95,000	1,095,000	1,280,000	.....	560,000	3,780,000	245,000	.....
November 8	200,000	430,000	460,000	125,000	1,110,000	395,000	.....	850,000	2,220,000	760,000	.....
November 15	38,000	350,000	57,000	8,000	2,640,000	775,000	.....	1,160,000	1,680,000	130,000	675,000
November 22	340,000	575,000	147,000	97,000	2,747,000	1,780,000	.....	1,245,000	3,090,000	425,000	635,000
November 29	210,000	360,000	9,000	100,000	3,150,000	155,000	155,000	575,000	1,295,000	470,000	80,000
December 6	615,000	275,000	130,000	30,000	980,000	595,000	16,000	530,000	1,065,000	121,000	795,000
December 13	325,000	2,745,000	725,000	120,000	1,365,000	790,000	.....	1,115,000	1,695,000	1,205,000	.....
December 20	360,000	875,000	815,000	160,000	960,000	1,110,000	.....	970,000	1,290,000	790,000	345,000
December 27	110,000	100,000	50,000	45,000	675,000	650,000	30,000	250,000	745,000	210,000	450,000

panies formerly handling the Spanish business.

American refiners have made plans for the further integration of their foreign business during 1931 to cope with the changing conditions in foreign oil markets. Prominent among the companies planning to expand their European operations this year may be mentioned Standard Oil Co. (New Jersey), Gulf Oil Corp., Atlantic Refining Co. and Vacuum Oil Co., all of which have developed ambitious plans for further integrating their foreign operations. Standard Oil Co. (New Jersey) strengthened its position in Great Britain during the past year by taking over the Anglo-American Oil Co., Ltd., prominent marketing organization in England, and Jersey, in conjunction with Gulf Oil Corp. and Atlantic Refining Co., has completed plans for a large modern refinery near Point Jerome, France, which will be built and operated in conjunction with French interests.

California's Position

California refiners attained greater prominence in the export picture during the past year, and shipments of Pacific Coast refined products into European markets, via the Panama Canal, picked up considerably. The California refiners succeeded in getting concessions from the export association in the form of more favorable differentials over the Gulf basis during the year and it was reported that a number of California cargoes went into export channels independently of the association. This development, while reacting against the export market situation, was of direct benefit to the eastern market, in that it diverted into foreign channels considerable quantities of "semidistressed" motor fuel that might otherwise have found its way to the Atlantic Seaboard.

There was considerable dissatisfaction on the part of Mid-Continent refiners during 1930 over the export situation and there was talk at one time of the formation of an independent export association, to operate in competition with the export group organized by the major companies. This second export association never progressed to the organization stage, but the agitation by the group was recognized by the existing association, which purchased considerable quantities of distressed gasoline in Group 3 territory and moved it into export channels.

The constant oversupply of gasoline throughout 1930, however, had a weakening effect on the export group. London interests came into the American market several times during the year, bought up gasoline in the open market in the Southwest, and moved it into export channels through the independent bulk terminal at New Orleans. This new competition, coupled with the difficulty in securing a 100 per cent agreement among members as to the advisability of price changes at the Gulf, was the starting point in the disintegration of the export association. The last step by the association, prior to its withdrawal from the market, was its authorization to member companies to "meet competition" wherever necessary, such price cutting to be regulated by the association under certain specified conditions. This step was followed shortly by announcement on November 6 of the suspension of the functioning of the group, and the restoration of a free and open market on export sales.

Course of Market

With the export association out of the picture, the market soon sought lower levels, in line with domestic market conditions, and posted prices for both kerosene and gasoline declined sharply. The Gulf export price basis record on principal products during the past year shows a rather wide range as follows:

	Cents per gallon					
	Assn. price					
	Jan. 1	Feb. 27	Nov. 6*	Nov. 25	Dec. 9	Dec. 23
Prime white kerosene	.07	.08	.04½	.04½	.04	.04¼
Water white kerosene	.08	.07	.05½	.05½	.05	.05¼
Navy gasoline	.08½	.08	.05⅝	.05½	.05⅛	.05⅛
400 endpoint gasoline	.09½	.09	.06¼	.06	.06	.05½
390 endpoint gasoline	.09⅝	.09¼	.06½	.06¼	.06¼	.05⅝
64-66 gasoline	.10	.09½	.06⅝	.06⅝	.06½	.06

*Note—Prior to the announcement of the withdrawal of the association on November 6, posted prices had been reduced about one-half cent under the association schedule, although this reduction was not "official."

While the lowest posted price for 64-66 for the year was 6 cents per gallon, it was reported that one sale had been made at the Gulf at 5.95 cents per gallon. The low point for the year on kerosene was reached during the week of December 9, but the prices of 4 cents per gallon for prime white and 5 cents for water white were advanced one-quarter cent per gallon with little moved at the lower figure.

The price outlook on refined petroleum products for export is rather bearish as the trade goes into the new year, and it is generally felt in market circles that the entire first quarter of the year will be required for readjustment, with little likelihood of any sustained advance until the second quarter. While the domestic market situation is slowly righting itself as refiners curtail production, there are still burdensome inventories to be further liquidated in some quarters and, what is more important still, price competition from Rumania and Russia shows no signs of any immediate lightening.

East Coast refiners and marketers with established outlets are looking for a favorable business during the year, particularly in cased products, but operators whose business is limited to the handling of inquiries in the open market face a rather uncertain outlook.

SOUTHWEST TEXAS FIELDS

(Continued from Page 52)

the Saxet Field where Saxet's No. 6 Dunn came in some months ago at around 4,300 feet that it is really a wildcat proposition, though Thompson's No. 1 Lawrence-Harrell got gas at 1,569 feet nearby. It has the earmarks of being a new field.

Houston Oil Co. is nicely started on its No. 1 Ollie Purl, east of the Agua Dulce Field, the first test to be started since it brought in No. 1 Comstock opening a field for high gravity oil.

In the Cartwright Field district of Live Oak County, Houston Oil Co. is putting No. 1-A Boothe on the pump. It has been swabbing about 100 bbls. of oil. The sand is at 5,370-77 feet. It is located about three-quarters of a mile north of the gas field producing at 2,350 feet and No. 1-A Boothe is the first producer in a deeper sand. The company has been working with the well for weeks and it is now to be put on the pump. In spite of its small size considering the depth, some operators consider it quite an important proposition. The company's No. 22 Cartwright, located in the center of the field, was carried to 6,023 feet and plugged back to 1,609 feet and completed as a gas well, the first at that depth in that field.

Bee County

Simms Oil Co.'s second attempt at bringing in a gas well in Bee County, 14 miles south and a little west of the Pettus Field, has been attended with difficulties. No. 1 Holzmark, its first test and discovery well, is a big gas well gauging 56,000,000 feet at total depth, 3,556 feet. No. 2 Holzmark was drilled deeper to 4,458 feet for experimental purposes and has been plugged back and casing set at 3,778 feet and since then the casing has been shot at 3,570-90 feet, but it blew in and bridged and later water broke in and more work will have to be done on the well. There seems to be plenty of gas there.

United Production Co.'s (formerly Union Producing Co.) No. 26 Ray is flowing about 150 bbls. of oil though it has not been gauged. This test is about 1,000 feet east of the company's No. 14 Ray in the Ray-McKinney Pool of the Pettus area and not up north in the Habbermacher Survey as first reported. Depth is 3,941 feet and it is a 1,000-foot east extension of the pool. It was reported last week as a gas well, and it did come in making gas, but has changed to oil. United Production Co. and Humble Oil & Refining Co. own all the leases in that territory and seem in no hurry to offset each other, hence there seems no danger to the proration programs.

Twenty miles northeast of the Pettus Field, where T. B. Slick's No. 1 Poetter opened a new oil pool, Slick estate has made location for the second test, No. 1 Allen, about 1,500 feet northeast of No. 1 Poetter, and will test out the size of the pool and then arrange for a market outlet for the oil.

In northwestern Live Oak County, Tul-Tex Oil Co. at 4,523 feet is abandoning No. 1 L. Jacob, 4 miles north of the Calliham oil pool. It had about 2,000,000 feet of gas at 1,029 feet but with some sulphur water and that is the most encouragement the test has had.

North of Balcones

Evans & Gant are pulling 6⅝-inch casing in No. 1 Jeff Love in Kerr County and will reset it at 3,376 feet. It was first set at 3,347 feet. A new plug may be put in the bottom of the hole, total depth of the test being 3,391 feet. The lead wool used to plug off the bottom the first time worked up into the hole and cut out the cups in the pump. Water has been bothering, too, and the operators are experimenting to find out where the trouble is.

Considerable of the interest in that part of the country from this on will be directed to the other tests starting up. Evans & Gant are interested in most of the new ones. Gant, Kilgore & Evans have the cellar dug for No. 1 A. D. Auld in Survey 23, about 4 miles southwest of No. 1 Love and over the line in Real County. Evans & Sprinkle are drilling below 425 feet in No. 1 J. M. Auld in Real County.

Darst Creek Proration

A new gauge on Darst Creek potential production is being taken this week. It is to be completed by the end of the week and is an eight-hour gauge.

GULF COAST FIELDS

(Continued from Page 46)

Corp. when that company suspended operations.

Other completions included Yount-Lee Oil Co.'s No. 91 McFaddin, Spindletop, a workover, flowing 450 bbls., at 4,001 feet; Ada Belle Oil Co.'s No. 145 Producers, Batson, pumping 152 bbls. fluid, 2 bbls. net oil, 469 feet; and E. M. Wilson's No. 6 Wheeler & Pickens, Humble, pumping 30 bbls., 1,501 feet.

Harrison & Abercrombie's No. 1 Blewitt, H.&T.C. Survey No. 125, North Dayton, Liberty County, flowed salt water at 4,909 feet and was abandoned. Cypress Oil & Development Co.'s No. 2 Kitzman, near Cypress, Harris County, was abandoned in shale at 4,430 feet. Humble Oil & Refining Co.'s No. 2 Cockrell-Moran, Section 14-20s-26e, Lake Grande Escaille Dome, Plaquemines Parish, Louisiana, tested salt water in sand at 4,044 feet and is drilling deeper in shale at 4,295 feet.

Another completion of the forepart of the week was Cranfill-Reynolds Co.'s No. 5 Esperson, on the west side of the producing area of Esperson Field, western Liberty County, which opened a deep producing horizon there. This well in sand at 6,707 feet, blew in making an estimated 10,000,000 feet of gas with a spray of high gravity oil. The latter production is around 100 bbls. on a quarter-inch choke. Pressure of the well is 775 pounds.

KANSAS FIELDS

(Continued from Page 48)

velopment Co. and Shell Petroleum Corp.'s No. 1 Ostlind, C SW NW, Section 12-19-2w, is moving in. Lario Oil Co. and Shell Petroleum Corp. made location for No. 1 Boal, SE cor. NW, Section 24-19-2w. Helmerick & Payne and Shell Petroleum Corp. is preparing to deepen from 2,974 feet. McPherson Oil & Gas Development Co. and Shell Petroleum Corp.'s No. 1 Meyers, SW cor. NE NE NE, Section 14-19-2w, made 27,198,000 feet of gas from sand 2,880-2,939 feet. Lario Oil Co. and Shell Petroleum Corp.'s No. 1 Wiggers, NE cor., Section 36-19-2w, has been completed for 340 bbls. in chat 2,938-75 feet. Shell Petroleum Corp.'s No. 1 Koehn, SW cor. SE NE, Section 16-21-3w, made 1,063 bbls. from Wilcox sand 3,408-16 feet.

Sedgwick County

Continental Oil Co. moved the rig in for No. 1 Nagel, SE cor. NE NW, Section 19-27-2. Van Marter, Lancaster & Davidson's No. 1 Houston, NW cor. SE SW NW, Section 19-27-2, is drilling at 460 feet. Fisher & Lauck's No. 2 Shaffer, NW cor. SE NW, Section 30-27-2, has been completed for 550 bbls. in 12 hours from Wilcox sand 3,251-67 feet. E. B. Shawver's No. 2 Robbins, SE cor. NW SW, Section 21-28-2, made 150 bbls. in chat 3,095-3,114 feet.

CANADIAN FIELDS

(Continued from Page 54)

Anaconda Oil Co. and Hylo Oils, Ltd. No. 1 test will spud in about May 1. East Crest Oil Co.'s No. 2-A, a big producer, is located on the southwesterly corner of LSD 16, but Atkins' No. 1 location is close to the northeasterly corner of the same section, and no drilling has ever been attempted so far east of the proven area. Production at this point would mean a very important extension of the South Turner Valley Field.

Commonwealth Petroleums' No. 1, LSD 7, Section 9-19-2w5, which developed about 12,000,000 feet of wet gas in the lime at 4,792 feet, has had considerable trouble with caving and bridging, and is cleaning out, preparatory to finishing its production test.

In the Mercury area, Mercury Oils' No. 5, Section 4-19-2w5, got the Dalhousie sand at 5,109 feet and is reported drilling at 5,233 feet. Miracle Oils' No. 3, LSD 11, Section 4-19-2w5, offsetting Miracle's No. 1 producer, has derrick up and is moving in rotary equipment for a test to spud in early in February. Mercury's No. 2 is cleaning out to increase production, which dropped to 20 bbls. a day on account of bridging.

Calmont Oils, Ltd., has suspended drilling operations on its various tests till spring. In Section 20-19-2w5, No. 2, LSD 11, is making around 110 bbls. a day from the lime, and a small production is being taken from No. 4 at 5,084 feet. No. 7 is standing in the lime at 5,414 feet. Nos. 4 and 7 will probably be deepened in the spring. In the Central Turner Valley, No. 1, LSD 2, Section 1-20-3w5, is standing cemented in the lime at 5,877 feet, with an increasing gas flow but some trouble with water is reported, it being necessary to bail the well about once a week. In addition to these tests which were active in the 1930 season, No. 3 in Central Turner Valley has been standing since 1929 at 1,585 feet. In South Turner Valley, No. 8 is standing cemented at 1,602 feet; No. 10 at 1,604 feet and No. 11 at 472 feet. In North Turner Valley, No. 5, LSD 3, Section 34-20-3w5, has been standing at 3,900 feet and No. 9, formerly Seneca Oil Co.'s No. 1, LSD 1, same section, is at 4,663 feet and has been shut down for over a year.

Hudson's Bay Tests

In the Keho Lake area, southern Alberta, Hudson's Bay Oil & Gas Co.'s No. 1, LSD 2, Section 17-11-22w4, is reported making rapid headway below 2,575 feet. In the Castor district, Hudson's Bay's Paintearth No. 1, LSD 5, Section 27-39-15w4, is drilling below 3,412 feet. Reports of an oil flow at 3,410 feet are contradicted by officials of the company.

Red Coulee Field

In the Red Coulee Field, southern Alberta, Scottish United Petroleums' No. 1, LSD 1, Section 3-1-16w4, is reported drilling around 850 feet, the only test active on the Alberta end. Devonshire Oils' No. 1, LSD 3-4, Section 10-1-16w4, is reported arranging to resume work in the spring at around 2,000 feet; this location is north of the producing wells and intended to test a potential northerly extension of the field. It is reported Vancouver interests will start a new test next spring on the west fold of the structure, in the vicinity of Kotop's No. 1. The lat-

ter test got shows of both oil and gas, but had to be abandoned at around 1,650 feet owing to drilling difficulties.

On the Montana end of the structure, Askalta Oils' No. 1 Vollbrecht, SE Section 11-37-4w, is deepening below 1,700 feet after cementing at 1,635 feet. This test is a half mile south of the nearest producers.

Ribstone Field

In the Ribstone Field, Algonquin Petroleums' No. 1, LSD 1, Section 20-45-1w4, has successfully shut off the first water, and is making new hole below 1,140 feet. The producing horizon is looked for around 1,800 feet. Rayco Oils' No. 1, LSD 3, Section 4-7-1w4, is reported rigging up and arranging water supply; the test will likely spud in this month. Tests of the Ribstone heavy crude for fuel oil for locomotive firing have been made, and are unofficially reported to have proven satisfactory; while negotiations are under way for establishment of a small refining plant to handle the output of the field. Four wells now shut in are estimated to have a potential aggregate production between 400 and 600 bbls.

Manitoba Gas Test

In the province of Manitoba, Commonwealth Petroleums' No. 1 test near Manitou has been drilled to 745 feet and is standing cemented in formation believed to be a cap rock overlying the gas sand.

British Columbia Test

In the Kelowna district, British Columbia, E. G. McKenzie Syndicate's No. 1, S2E26 Osoyoos, is reported resuming after running casing to 680 feet.

Saskatchewan Drilling

In Saskatchewan, Simpson Oil Co.'s No. 1, Section 9-29-25w2, is reported down 2,730 feet, and drilling. It is reported that accumulated gas or water pressure forced the tools up to 300 feet in the hole and caused a temporary bridge, which has been cleared.

Ontario Drilling

In the Dawn Field, Lambton County, Ontario, Union Natural Gas Co.'s No. 47, W half Lot 19, Concession 1, Dawn Township, has been deepened to 1,797 feet. At 7,770 feet, increased production to around 4,000,000 feet a day. Union's No. 54, Steele farm, Lot 26, Concession 10, Euphemia Township, is drilling around 1,700 feet, after getting a small show of gas at 1,570 feet. This show, though noncommercial, was from the same sand where Southern Ontario Gas Co.'s No. 1 in Mosa Township, Middlesex County, secured its production. As the Mosa production is many miles further east, the corresponding show in Euphemia Township may indicate some possibilities.

In Mosa Township, Middlesex County, Southern Ontario Gas Co.'s No. 6, NE, Lot 18, Concession 3, is drilling around 1,875 feet after setting casing at 1,803 feet. Southern Ontario's No. 5 is reported a dry hole below 1,780 feet, though a small show was encountered at 1,514 feet which petered out in deepening.

Alberta

In the North Central Turner Valley area, Spooner Oils' No. 4, LSD 14, Section 13-20-3w5, following a shot of 800 quarts after failure to recover lost tools, is reported to have developed a wet gas flow between 15,000,000 and 20,000,000 feet at 5,449 feet. It looks like a fair commercial producer, though crude naphtha recovery has not yet been determined. The test is 379 feet in the lime. A previous flow of 5,500,000 feet was met at 5,275 feet.

In the Red Coulee Field, Scottish United Petroleums' No. 1, LSD 1, Section 3-1-16w4, at 1,300 feet, drilled into a gas flow measuring 250,000 feet. The test is deepening after running 10-inch casing to 1,420 feet. Taylor Syndicate has subleased adjacent acreage from Alberta Pacific Consolidated Oils and will drill a test diagonally offsetting Southern Alberta Exploration Co.'s producer.

LA.-ARK. FIELDS

(Continued from Page 50)

west. The Stephens' test is about 12 miles west of town.

E. & F. Oil Co.'s No. 1 Beck, NW SW, Section 36-15-26, Miller County, tested salt water at 2,961 feet and was coring ahead. Location is about 2½ miles southeast of C. V. Lenz' producer. Lenz was drilling at 4,350 feet on No. 2 Johnson, Section 24-15-26, offsetting the producer, with 150 feet to go before reaching reported contract depth. Lincoln Lease Holding Syndicate's No. 1 Lincoln Townsite, Section 30-15-32, Washington County, in the northwest corner of the State, is dropped from the report as a dry hole at 1,500 feet where it had been shut down for a year.

East Texas Activity

As a consequence of the Rusk and Gregg County, Texas, discoveries there is a tremendous lease play going on all through the counties bordering on the Louisiana and Arkansas line. Any number of individuals, a great many small organizations and not a few of the major companies are participating, but up to date there has not been any race to make the first locations. Sam Hunter, of Shreveport, took over the Shell Rock Oil Co.'s well and 15,000-acre block at Hallsville in the western part of Harrison County, an area where the most intensive play appears to be located at this writing, and skidded derrick to start a new hole on the Daugherty lease in the W. B. Burriss Survey. The first hole was junked at 3,568 feet. F. M. Fuller is well along with his plan of blocking 10,000 acres for a 7,000-foot, or deeper, test in the Waskom area just west of the state line and there are rumors of old shallow tests being deepened. As a preliminary, or in conference with this suddenly stimulated leasing activity, a number of major companies are reported to have sent geophysical crews into East Texas for surveys of the entire territory along the ancient shore line of the Mississippi embayment which curves northeastward into Miller County, Arkansas, and Caddo Parish, Louisiana.

Panola County

The 4,700-foot horizon in the old Bethany gas area of Panola County, corresponding to the 2,900-foot zone of the Trinity in Pine Island, Caddo Parish, 20 miles east, which has recently been attracting considerable attention, developed another good gasser when United Production Corp. of the United Gas System, completed No. 5 Baker in the B. C. Jordan Survey. The well, well inside proven shallow territory, gauged 10,000,000 feet at 1,725 pounds with about 8 bbls. salt water from 4,720 feet. Natural Gas Producing Co.'s No. 4 Roquemore, a shallow test in the same survey, made 1,000,000 feet of gas through tubing from 2,269 feet. M. H. Smith and others' No. 1 Hunt a wildcat in the Albert Johnson Survey, 5 miles south of Bethany gas and D. Thomason's No. 15 Crenshaw in the B. C. Jordan Survey, long carried as derricks, are dropped from the report as not to be drilled.

Nacogdoches County

Another consequence of the Rusk and Gregg County developments appears in a renewed interest in the possibilities of deep production in Nacogdoches County, far to the south of the two new pools. There has been enough shallow production in Nacogdoches, at less than 1,000 feet, for the last 15 or 20 years to keep a small refinery at Nacogdoches (county seat) going and recent newspaper reports are to the effect that there is more or less lease activity in the county with deep tests as the objective.

MISSISSIPPI

Eight operations were removed from the Mississippi list this week, most of them old wells that have not turned a wheel since being listed anywhere from six months to a year or two ago. Two of them, however, seem to be markers of the probable extent of the Jackson gas district. These were: Attkison & Dyer's No. 1 Wiggins in Section 33-6-1e, Hinds County, in the northwest corner of what has been roughly defined as proven territory but which is as a matter of fact more nearly wildcat although there are producing wells north, east and south. It gauged 8,000,000 feet with a spray of water at 2,496 feet and probably is an edge well on a "high" separate from the original Jackson Field. The other was Iowa Gas Co.'s No. 1 Payne in the NW NW, Section 15-5-1e, Hinds County, a half mile or so northwest of Love Petroleum Co.'s oil-gas-salt water well and a quarter southwest of a good gasser. At 2,505 feet it made an estimated 5,000,000 feet of gas with a spray of water.

Gulf Refining Co.'s proven area deep test in Rankin County, No. 1 Hamilton, SW SW, Section 12-5-1e, was abandoned in igneous rock at 4,087 feet after a small show of oil at 2,620 feet, salt water at 2,625-40 feet and nothing else. Sabine Oil & Gas Co.'s No. 1 Taylor, SW NE, Section 6-5-2e, a mile northeast of production, was dry and abandoned in the top of the chalk at 2,549 feet. Big Block Oil & Gas Co.'s No. 1 Southern Institute, Section 30-6-4, and Jackson Oil & Gas Co.'s No. 1 Central Cotton Oil Co., Section 3-5-1e, Hinds County, derricks, are off the report as is Dr. Barney Kennedy and others' No. 1 fee, Section 34-6-1e, Hinds County, a location. E. C. Steele and others' No. 1 Box, SE NE, Section 25-14-4, Humphreys County, shut down at 60 feet for the last two years, also is dropped.

Daily Average Production

Production, daily average runs from the field, dropped off 500 bbls. in round figures from last week's total for the division. Louisiana runs of 40,390 bbls. were 155 under last week and Arkansas' 50,665 bbls. was 335 bbls. less. Most of the pools showed declines but the greatest differences were a decline of 140 bbls. in runs from Caddo light oil territory and 300 bbls. from Champagnolle. Daily average runs from the several pools were:

NORTH LOUISIANA

Caddo, light	8,070
Caddo, heavy	2,780
Homer	3,370
Haynesville	5,410
DeSoto-Red River	2,800
Elm Grove	515
Bellevue	570
Cotton Valley	1,760
Urania	4,920
Pleasant Hill	390
Sarepta-Carterville	1,940
Zwolle	7,000
Holly	865
Total	40,390
Last week	40,545
Decrease	155

ARKANSAS

El Dorado	3,900
Smackover, light	4,520
Smackover, heavy	34,050
Stephens	860
Nevada County	1,000
Lisbon	800
Champagnolle	4,510
Bradley	60
Mount Holly	65
Urbana	900
Total	50,665
Last week	51,000
Decrease	335
Both states	91,055
Last week	91,545
Decrease	490

CALIFORNIA FIELDS

(Continued from Page 60)

No. 3 Meigs, a new well in the Santa Barbara Mesa Field, flowing 260 bbls. from 2,075 feet. The first well on the Meigs lease was somewhat of a disappointment but the second well, No. 2, which preceded the current completion by several weeks, came in flowing 1,750 bbls. per day upon completion. There were no new wells chalked up in the Ventura Avenue Field during the week but the Associated and Shell each has a number listed for early completion. The Bolsa Chica Oil Co. is running a string of 6⅝-inch in No. 5 Hartman and will attempt to complete this well in the near future. At Coal Oil Point in Santa Barbara County, the Bolsa Chica is attempting to open a new field comparable with that found by the Barnsdall and Rio Grande more than a year ago at Elwood. A sufficient thickness of oil sand was cored by the Bolsa Chica to justify the expectation of securing commercial production but on a recent test water trouble prevented the fulfillment of this hope. The source of this water has not been definitely determined but from previous work in this area it is indicative of bottom water.

The Ramsey Petroleum Co. has focussed the attention of operators on the Elysian Park area of Los Angeles Basin by recent leasing activities indicative of early work if and when permission can be secured from the Los Angeles city council. The Ramsey interests recently concluded an exhaustive geological examination of the area which revealed that a large part of the potential accumulation was located within Elysian Park, a municipally owned recreation ground of Los Angeles. An aggressive leasing campaign has been conducted in an effort to tie up an adjacent subdivided area but this work has not met with great success as property owners are somewhat reluctant to lower present property values by sanctioning exploration work. The area lies wholly within the corporate limits of the city of Los Angeles and is restricted although it might be possible to secure a rezoning permitting drilling. The Elysian Park area has possibilities and is considered favorable from a geological standpoint.

MICHIGAN FIELDS

(Continued from Page 60)

Township, and the other in Montague, or White River Township, west of several unsuccessful wells drilled during the past two years by the White River Oil Corp. H. C. Nelson, of Nelson & Witt, Muskegon operators, took over the last well and a number of the leases of the White River corporation and is contemplating expenditure of at least $20,000 to test the area.

Edward DuVall, independent operator, who drilled four wildcat wells in Golden Township, Oceana County, has announced he will drill another well in this vicinity. Promoters of the Fruitvale Land & Lot Owners' No. 1 C. J. Sipple well in Otto Township, Oceana County, also have announced that they will drill another well within a mile of the one in which they struck several hundred feet of oil in the Traverse.

The Empire Oil & Refining Co. has taken 12 leases recently in Sherman, Coldwater and Deerfield Townships, Isabella County.

OKLAHOMA FIELDS

(Continued from Page 45)

the border line of Oklahoma and Kansas. There is one producing well in the northwest corner of the lease producing around 60 bbls. a day on the pump. The other producing wells in the pool are in Kansas. The east offset was drilled to the No. 1 Clark, in the NE cor., Section 17-29-4w, by the Gypsy Oil Co. but it was a small producer and production went off in a few months and the well was abandoned. Production in the pool is found in the Wilcox sand. The new well is the only drilling operation in the pool at the present time.

Two wildcat tests in Garfield County are resuming operations after being shut down. The J. V. Bailey and others' No. 1 White, SE cor. NE, Section 9-24-6w, which was shut down at 5,825 feet for several months, is now cleaning out and drilling deeper at 5,830 feet. The test was started in 1928 by Pulse and Beamer and was taken over by the present owners about two months ago.

The other Garfield wildcat test, Continental Oil Co.'s No. 1 Looman, NE cor. SE, Section 9-20-4w, in the southeastern part of the county, has cleaned out the hole and resumed drilling at 5,198 feet. The test is located between the Marshall and Covington areas and was started several years ago by the Marland Oil Co. but has been shut down for more than 18 months. The test has found several showings of oil and gas in the shallower horizons and was drilled to a total depth of 5,735 feet but was plugged back to 5,200 feet.

Drawing on Seminole Stocks

Companies with crude oil stocks in the Greater Seminole area are continuing to withdraw the oil from storage during the month of January. The average withdrawal was 5,283 bbls. per day for the week ending January 15, compared to a withdrawal of 15,612 bbls. per day the previous week. The companies drawing on storage were Gulf Pipe Line Co., The Texas Company, Tidal Oil Co., and Phillips Petroleum Co. The Texas Company has been running crude oil to storage

during the last week while the Texas-Empire pipe line was handling a large shipment of crude from the Greater Seminole area.

One of the interesting semiwildcat tests near the Konawa area is the Mid-Continent Petroleum Corp.'s No. 1 Harjo, SW cor. NE NW, Section 6-5-6, south of the Canadian River and southwest of the production in the Konawa Pool.

Magnolia Petroleum Co.'s No. 1 in the NW cor. SW SE, Section 24-5-7, is spudding. The test is semiwildcat located on the west side of the Allen-Sasakwa area in Seminole County.

In the Wewoka Townsite Pool, Deep Rock Oil & Refining Co.'s No. 2 Douglass (10 acres), NE cor. SW NE, Section 30-8-8, found a hole full of water in the Wilcox sand at 4,210-20 feet. The test is making around 50 bbls. of oil a day from the Hunton lime, and is located one location east of the discovery well in the area, and indicates the east side of the pool is dry in the Wilcox sand.

In Southern Fields

Two new operations were started in Stephens County during the week and one dry hole was completed. George Pace's No. 8 Watkins, SE cor. NE SE, Section 21-2s-7w, was spudding. It is a location north of a 600-bbl. well. A. L. Andree and others' No. 1 Patrick, CNL SE SE, Section 3-3s-8w, a wildcat, was also spudding. It is located south and west of production. W. O. Smythe and others' No. 2 House, NW cor., Section 29-2-3w, an offset to a wildcat producer, may be abandoned as a dry hole.

Some of the wildcat operations were shut down while others were drilling deeper. Junior Oil Co.'s No. 1 Thompson, NE cor. SW SE, Section 1-1-7w, was drilling at 2,600 feet. Crane & Rankin's No. 1 Adkins, NE cor. SE, Section 14-1-9w, a wildcat north of the Oil City Field, was drilling at 2,595 feet.

Greater Seminole Production

The production from the Greater Seminole area for the week ending January 19, averaged 199,353 bbls. a day from 2,861 wells. The first 12 pools listed below comprise the Seminole area, which averaged 134,571 bbls. of oil a day from 1,870 wells.

Pool—	Wells	Bbls.
Little River	369	22,464
East Little River	82	9,928
Carr City	78	11,624
Maud	133	3,031
Mission	93	7,544
Bowlegs	278	11,954
Earlsboro	283	18,729
South Earlsboro	27	9,035
East Earlsboro	158	19,242
Seminole	254	13,606
East Seminole	33	1,948
Searight	82	5,466
Total	1,870	134,571
Allen	276	12,783
Asher	26	748
Wanette	54	10,278
Konawa	111	16,194
Sasakwa	50	4,209
St. Louis	474	20,570
Grand total	2,861	199,353

Greater Seminole Shipments

The pipe line shipments from the Greater Seminole area totaled 189,849 bbls. for the week ending January 19. The daily average shipments by companies from the various pools were as follows:

Company—	Seminole bbls.	St. Louis, Pearson, Asher bbls.	Konawa bbls.
Barnsdall	2,603	.....	.....
Champlin	4,165	.....	460
Consolidated	.....	2,981	.....
Cosden	7,271	.....	3,110
Deep Rock	2,846	2,229	.....
Empire	6,413	.....	.....
Gulf	19,239	3,912	952
Magnolia	7,938	3,552	5,029
Oklahoma	19,744	219	220
Phillips	1,296	.....	.....
Prairie	3,714	1,987	1,031
Prod. & Ref.	2,142	.....	.....
Pure	8,532	.....	.....
Shell	7,221	451	1,222
Stanolind	21,357	6,164	4,237
Texas	9,710	5,222	1,995
Tidal	9,928	3,854	.....
White Oak	510	.....	.....
Total	134,629	30,571	18,256
Tank cars	5,292	1,101	
Grand total	139,921	31,672	

Oklahoma City Shipments

The total crude oil shipments from the Oklahoma City Field for the week ending January 19 were 806,141 bbls. The Champlin Refining Co.'s shipments represent runs for a period of 30 days. The total shipments by companies were as follows:

Company—	Bbls.
Empire	17,008
I.T.I.O.	7,209
Magnolia	11,479
Oklahoma	12,413
Prairie	453
Stanolind	21,684
Sinclair	5,702
Shell	907
Tidal	2,725
Capitol	143
Champlin	34,638
Century	766
Anderson-Prichard	36
Total	115,163

Oklahoma City Production

The following wells were on production during the seven days ending January 19 in the Oklahoma City Field under proration orders. All other wells were shut in and will be opened and produced according to the curtailment plan.

Company, farm—	S-T-R	Wells	Bbls.
Anderson-Prichard:			
Gibbons	1-11-3w	4	29
Pest House	2-11-3	2	156
Roosevelt Place	2-11-3	5	962
Brown et al	14-11-3	1	312
British-American:			
Holmes	10-11-3	7	3,032
California:			
Stout	2-11-3	1	564
Capitol:			
Campbell	2-11-3	1	139
Chattam:			
Lindsey	2-11-3	1	1,291
Continental:			
Sudik	6-10-2	2	209
Cromwell-Franklin:			
T. Park	13-11-3	32	5,430
Denver:			
Harvey	15-11-3	1	391
Empire:			
Gustine	1-11-3	2	21
Hall-Briscoe:			
Grace	3-11-3	1	6,714
Muller	2-11-3	1	1,122
I. T. I. O.:			
Barker, Drake	14-11-3	1	113
Bodine, A.	24-11-3	6	96
Borden	23-11-3	1	43
Brokaw, C.	13-11-3	4	718
Button	19-11-2	5	416
Canfield, Butt	19-11-2	3	43
Carrico	14-11-3	5	411
Coppinger	11-11-3	8	548
Corff	11-11-3	5	142
Drake	14-11-3	2	147
Eacock	11-11-3	2	81
Emmerson, N.	30-11-2	11	144
Farley, E.	24-11-3	1	94
Farley, L.	19-11-2	4	570
Farley, Fuzzell	19-11-2	2	772
Ferndale, Comm.	11-11-3	5	1,234
Fortson, E.	24-11-3	3	44
Funk	11-11-3	1	147
Fuzzell, M.	19-11-2	3	235
Habegger	14-11-3	2	212
Hammer	11-11-3	2	367
Handl	11-11-3	1	66
Hiddleston, S.	19-11-2	1	206
Huffman	14-11-3	2	202
Ivanhoe	15-11-3	2	169
Jennings	13-11-3	3	67
Johnson	25-11-3	9	227
Jones, H. W.	1-11-3	4	846
Jones	31-11-2	14	866
Jones, Comm.	1-11-3	4	435
Knox, May	14-11-3	4	386
K. Henning	24-11-3	3	11
Lawrence Place	15-11-3	3	1,250
Lawton	11-11-3	2	148
Lemmon	11-11-3	4	140
Lindsey	15-11-3	1	110
Mid-Texas	23-11-3	1	118
M. K. & T.	35-12-3	4	365
Mt. Vernon Heights	15-11-3	1	39
Okla. State Land	36-11-3	8	792
Pasadena Heights	14-11-3	4	668
Peterson, Sad	25-11-3	8	1,387
Phelans	15-11-3	2	62
Phillips	1-11-3	1	313
Precure, A.	11-11-3	1	238
Precure, E.	11-11-3	2	110
Reynolds	6-10-2	1	28
Salasman	32-11-2	5	20
Spannagle	15-11-3	1	485
Spillman	14-11-3	3	271
Starkey	11-11-3	2	474
Sudik	31-11-2	10	2,037
Thelmer, E.	12-11-3	8	571
Trosper	13-11-3	10	743
Trosper, Clar.	14-11-3	4	462
Trosper, C. E.	11-11-3	1	167
Trosper, E.	14-11-3	2	173
Trosper, H. G.	14-11-3	7	425
Trosper, Hughes	11-11-3	1	98
Unsell, M.	23-11-3	6	1,139
Unsell-Krager	23-11-3	3	1,047
Viewpoint	10-11-3	2	1,469
Warden, M.	24-11-3	1	292
Waters	23-11-3	6	167
Warner, Farley	23-11-3	2	83
Wheeland	10-11-3	1	220
Wheeler	13-11-3	3	127
Williams	23-11-3	1	289
Williamson, Can.	24-11-3	2	59
I. T. I. O. et al:			
Boulevard, Add	14-11-3	1	29
Kedberg:			
Burss	2-11-3	1	87
Mabee:			
Rusty	10-11-3	1	1,249
Mid-Kansas:			
Fortson	24-11-3	5	22
Mollman	23-11-3	4	59
Tros-Browning	18-11-2	1	19
Trosper, D. B.	19-12-1	1	167
Oils, Inc.:			
Thompson	2-11-3	1	1,874
Phillips:			
Day	2-11-3	1	69
Higgins	10-11-3	1	1,077
Lybrand	2-11-3	1	1,356
McAsuland	10-11-3	1	1,271
Rallen	2-11-3	1	560
Plains:			
Burt	10-11-3	1	914
Saddler	12-11-3	1	237
Prairie-Slick:			
Hiddleston	19-11-2	7	34
Sigman	32-11-2	7	171
Scott:			
Ashley	14-11-3w	1	357
Shell:			
Potty	30-11-2	7	16
Sinclair:			
S. Land No. 54	36-11-3	16	633
Stamper	30-11-2	6	43
Vencl	31-11-2	16	3,559
Skelly et al:			
Dillon	2-11-3	2	317
Ainsworth	10-11-3	4	451
Hurt	2-11-3	1	2,850
Tanner	10-11-3	2	1,124
Slick, T. B.:			
Bailey	1-11-3	1	176
Campbell	3-11-3	2	2,970
Classen	2-11-3	3	2,686
Classen-Edwards	3-11-3	1	5,071
Foote-Briscoe	2-11-3	1	12
Frisco	3-11-3	1	1,195
Frost, C. G.	10-11-3	1	139
Frost, Heights	10-11-3	4	129
Gleason	1-11-3	1	153
Glidden	13-11-3	2	46
Martin	1-11-3	1	63
Thornton	15-11-3	1	220
Wespaco	34-12-3	1	4,599
Wilson	2-11-3	1	1,321
Slick et al:			
Alexander	2-11-3	2	41
Baker	1-11-3	5	140
Crawford	1-11-3	1	212
Danreuther	2-11-3	3	139
Dunivan	1-11-3	1	143
Page	14-11-3	2	515
Houghton	1-11-3	1	191
Lard	2-11-3	1	4,049
Milner	1-11-3	2	285
Townsend	1-11-3	2	89
Carter	1-11-3	1	246
Hoops	31-11-2	8	499
Sunray:			
Harris	2-11-3	1	208
Wirt Franklin:			
Birg	2-11-3	1	37
Holder	2-11-3	2	250
Lowery	12-11-3	10	1,844
Page	35-12-3	5	732
Page, Tucker	35-12-3	1	91
Thelmer	2-11-3	13	1,397
Wright	2-11-3	3	75
Total		692	95,524
Last week		684	73,369

New wells, 9; dry and abandoned 1. Increase 22,155 bbls. Average per well for pool 138 bbls.

Carter County

Carter Oil Co. is building the rig for No. 3 J. Franklin, NW cor. NE NE, Section 24-1s-3w. C. L. Anderson has the rig up for No. 8 Eaves, SE cor. NW SW, Section 24-1s-3w.

Creek County

C. O. Buckles and others moved the rig in for No. 1 A. Conner, NE cor. SE NW, Section 9-19-7. R. E. Freeman has a machine on the location for No. 1 Green, NW cor. SE NW, Section 15-19-7. William McCulloch and others' No. 1 Wofford, NW cor. SW SE, Section 15-19-7, is a rig. Fogle and others' No. 2 Strip, SW cor. NE SW, Section 24-19-7, is drilling at 1,290 feet. O'Hair & Foster made location for No. 1 Stanley, SW cor. NW, Section 4-17-10. F. R. Billingslea moved the rig in for No. 1 Wilson, SW cor. SE SW, Section 15-15-8. No. 2-A Wayman, NW cor. NE NW, Section 22-15-8, is a machine. C. O. Buckles' No. 1 Coonrod, SW cor. NE SW, Section 3-19-9, has been completed for 5,000,000 feet of gas in Wilcox sand 2,713-14 feet. Jackson & Wise Oil Co.'s No. 3 West, CWL SE NW, Section 17-18-9, has been completed for 8 bbls. in sand 3,193-3,220 feet. Hulbert and others' No. 1-A A. George, SE cor. NE SE, Section 23-18-11, made 5 bbls. from sand 1,516-34 feet. Merkle and others' No. 7 Crider, CEL SE NW, Section 31-17-12, has been abandoned at 2,163 feet. Jackson & Wise's No. 9 Folsom, CNL NE NE, Section 9-16-11, made 6 bbls. in sand 2,317-83 feet. F. R. Billingslea's No. 1-A Wayman, NE cor. NW NW, Section 22-15-8, has been completed for 85 bbls. in sand 2,875-83 feet.

Grady County

Badgett & Cooper's No. 1 Mileur, NW cor. SW, Section 24-4-8w, is drilling at 2,046 feet. Meridian Gas Co.'s No. 1 Skelly-Snodgrass, C S half NE NE, Section 36-4-8w, is drilling at 1,460 feet.

Jefferson County

Brown & Gouin's No. 1 Cox, SW cor. NW NE, Section 35-7s-6w, has been abandoned at 2,528 feet.

Haskell County

Indian Territory Illuminating Oil Co.'s No. 1 Blake, SW cor. NW, Section 3-10-21, has been abandoned at 3,007 feet.

LeFlore County

Sooner Gas Co.'s No. 1 L. Tucker, NE cor. SE NW, Section 33-7-26, is dry and abandoned at 1,822 feet.

McClain County

The Prairie Oil & Gas Co.'s No. 1 Perkinson, SW cor. SW NW, Section 22-7-2w, has been abandoned at 6,656 feet.

Muskogee County

Braman Oil Co. moved a machine in for No. 1 Collins, C NW SE, Section 17-13-16. Hall & Ray's No. 1 A. Scott, SE cor. SW NW, Section 30-12-19, has drilled to 150 feet and shut down. Singer P. & S. Co.'s No. 2 Charles, SW cor. NE SW, Section 6-15-15, is dry and abandoned at 1,867 feet. J. M. Foltz' No. 2-A Woodall, CSL NW SW, Section 20-15-16, is dry and abandoned at 1,328 feet. C. F. Finefield and others' No. 1 M. Sango, NE cor. NW NW, Section 9-15-18, has been completed for 5 bbls. in sand 985-1,004 feet. J. P. Flannigan's No. 1 Sanders, SW cor., Section 18-15-19, has been abandoned at 1,340 feet. W. H. Guinan's No. 1-A J. Kelly, C8L NW SW, Section 5-14-17, is a dry hole at 622 feet. Braman Oil Co.'s No. 1 Jackson, CEL SE NW, Section 17-13-16, has been completed for 16,599,180 feet of gas in sand 2,055-58 feet. Indian Territory Illuminating Oil Co.'s No. 1 Mulkey, C NE NE, Section 36-12-18, made 4,200,000 feet of gas in sand 603-15 feet.

Noble County

Twin State Oil Co. made location for No. 1 Stuart, SE cor. NE, Section 5-20-1w.

Okfuskee County

Papoose Oil Co.'s No. 6 McNac, CNL NW SE, Section 25-11-11, is an old well drilling deeper at 3,408 feet. O'Laughlin and others' No. 1 Keys, SW cor. NE SW, Section 11-11-8, has been completed for 16 bbls. at 4,028 feet after plugging back from 4,225 feet in Wilcox sand.

Okmulgee County

J. H. Rebold Oil Co.'s No. 1 Replogle, NW cor. NE NE, Section 12-15-12, is drilling at 310 feet. Babcock Brothers' No. 2 Harris, CSL NW NW, Section 1-14-14, is rigging up. L. C. Wheeler's No. 1-A Throckmorton, SE cor. SW, Section 29-15-13, has been completed for 1,000,000 feet of gas in sand 1,924-30 feet. The Carter Oil Co. and others' No. 2 Chamberlain, NE cor. NW NE, Section 3-14-12, has been abandoned at 2,748 feet after deepening from 1,950 feet. W. C. Newman's No. 1-A Brinton, SE cor. NE NW, Section 14-14-13, has been completed for 3,000,000 feet of gas in sand 1,852-72 feet.

Osage County

Oklahoma Natural Gas Co.'s No. 1,823, SE cor. NE NW, Section 2-30-12, is rigging up. Bacon & Voyles' No. 9, SE cor. NW SW, Section 30-23-9, has been completed for 10 bbls. in sand 479-93 feet.

Oklahoma County

Indian Territory Illuminating Oil Co. and others' No. 2 M.K.&T., SW cor. SE SW, Section 35-12-3w, Oklahoma City Pool, has been completed for 881 bbls. in 14 hours from Wilcox sand 6,200-6,540 feet. Oils, Inc.'s No. 1 Thompson, NW cor. SW NW NW, Section 2-11-3w, has been completed for 10,320 bbls. in Wilcox sand 6,242-6,537 feet; estimated potential, 61,920 bbls. Skelly Oil Co.'s No. 1 Hurt, CSL NW NW NW, Section 2-11-3w, has been completed in Wilcox sand 6,240-6,539 feet for 44,452 bbls. in 14 hours and 25 minutes. T. B. Slick estate's No. 1 Lard, NW cor., Section 2-11-3w, has been completed for 33,011 bbls. in 12½ hours from Wilcox sand 6,252-6,578 feet. No. 1 Wilson, NW cor. SW NW, Section 2-11-3w, has been completed for 9,248 bbls. in four hours from Wilcox sand 6,265 feet, total depth 6,526 feet. Wirt Franklin Petroleum Corp.'s No. 2 Wright, NW cor. NE NW, Section 2-11-3w, has been completed for 3,258 bbls. in 13¾ hours in sand 6,278 feet, total depth 6,536 feet. Phillips Petroleum Co.'s No. 1 Higgins, NE cor. SE SW, Section 10-11-3w, made 7,542 bbls. in four hours from Wilcox sand topped at 6,392 feet, total depth 6,550 feet.

Phillips Petroleum Co. and Blackstock's No. 1 Burt, NW cor. SE SW, Section 10-11-3w, has been completed for 6,401 bbls. in eight hours, producing from Wilcox sand topped at 6,523 feet, total depth 6,575 feet. Indian Territory Illuminating Oil Co. and others' No. 2 Lawton, SE cor. SW NE, Section 11-11-3w, topped sand at 6,550 feet, drilled to 6,559 feet and made 571 bbls. in eight hours.

Pawnee County

Wentz Oil Corp.'s No. 1 Lillie, SE cor. SW NE, Section 26-22-3, has been abandoned at 4,328 feet in Wilcox sand topped at 4,312 feet.

Payne County

Deep Rock Oil Corp.'s No. 1 Harris, NE. cor. SW, Section 9-18-5, has been abandoned at 3,650 feet.

Pittsburg County

Central States Light & Power Co.'s No. 2 Bascom, SW cor. NE, Section 10-7-18, has been completed for 24,000,000 feet of gas in sand 1,784-2,008 feet.

Pottawatomie County

Payne and others' No. 4 Bullock, NW cor. SE NE, Section 22-6-3, West Asher Pool, flowed 2,278 bbls. from sand 3,562-3,600 feet.

Seminole County

The Prairie Oil & Gas Co. and T. B. Slick estate's No. 5 Hyde, SE cor. NW, Section 2-8-5, Carr City Pool, is rigging up rotary tools. Magnolia Petroleum Co.'s No. 1 Whitney, NW cor. SW SE, Section 24-5-7, is rigging up. No. 1 Reed, NE cor. NW NE, Section 26-5-7, West Allen Pool, is also rigging up. Gypsy Oil Co.s No. 4 Harjo, SE cor. NW SW, Section 20-6-6, Konawa Pool, has been completed for 65 bbls. in sand 2,843-47 feet after plugging back from 2,970 feet to 2,850 feet. The Prairie Oil & Gas Co.'s No. 1 Maxey, SE cor. NW, Section 18-6, made 20 bbls. in Hunton lime 3,913-22 feet.

Stephens County

George Pace and others' No. 8 Watkins, SW cor. SE NE SE, Section 21-2-7w, is rigging up. Morrison and others' No. 2 Hightower, NW cor. NE SW NE, Section 15-3s-5w, is shut down at 265 feet. Carl Wiley's No. 1-A Gilmore, SW cor. NE SE NE, Section 10-2s-5w, made a 4-bbl. well in sand 845-75 feet after it was plugged back from 1,074 feet. George Pace and others' No. 7 Watkins, NW cor. NE SE SE, Section 21-2s-7w, has been completed for 400 bbls. in sand 1,712-14 feet. Pace and others' No. 4 Dilley, NW cor. NE NW SW, Section 27-2s-7w, has been abandoned at 1,507 feet. Hawkes, Ware and Carter Oil Co.'s No. 1 Duncan, NE cor. SW NE, Section 28-2s-7w, is dry and abandoned at 1,751 feet.

Tulsa County

H. W. Bowder and others' No. 1 McIntosh, CEL W half NW NW, Section 417-14, is rigging up. Bert Swift and others' No. 1 Franklin, NW cor. SW SW, Section 9-19-10, has been abandoned at 2,010 feet.

SCOUTING CHANGE

HOUSTON, Tex., Jan. 26.—A change in the scouting work of the Gulf Coast division of the Pure Oil Co. making the scouting department a separate unit instead of a branch of the land department, has been effected, with George E. Robinson as chief scout.

Mr. Robinson has been in the scouting service of the Pure Oil Co. on the Gulf Coast for six years, and previous to that was with the original Humphreys Corp. before its purchase by the Pure Oil Co. Before these connections he had considerable experience in the oil business, having wildcatted and operated for himself for several years.

Mr. Robinson's present territory out of Houston is being divided between two other scouts, who will add the additional amount to their respective areas. E. M. Pinkard, working out of Houston, and who has had the Southeast Texas counties, will take the eastern half of Mr. Robinson's territory, while B. C. Seldon, working out of Corpus Christi, will take the western part.

RAISE CRUDE PRICE SAYS RICHARD AIREY

NEW YORK, Jan. 24.—Richard Airey, Royal Dutch-Shell Co., in a statement, says: "The great work successfully accomplished by the petroleum industry during the last 12 months by curtailment of production is now in danger of being undone. A suggestion is made that more crude oil be produced although there is no market for it with the inevitable result that prices cannot be maintained and the oil will have to be run to storage, thus adding to the huge inventory which is crippling the petroleum industry and bringing it to a breaking point.

"In our opinion, collapse of proration will undoubtedly lead to chaos. We think the small producers should be recompensed for their sacrifice and the price of crude oil should be higher. It is manifestly unfair to ask a producer to curtail his output and, at the same time, penalize him for doing so. Without proration one can easily imagine what can take place by reference to the conditions in 1915 when uncontrolled production in the Cushing Field brought the price of 39 Be. crude oil down to 28 cents per barrel and crude oil then produced is still in storage. There have been great changes in refining since 1915 and, today, twice the quantity of gasoline is recovered from a barrel of crude oil, so that crude oil going into storage now will not be required for refining for more than 15 years.

"The proper place for storage of crude oil is in the ground, where it does not deteriorate in quality as in storage. We have advocated this policy for 30 years, carried it out in practice and confidently recommend it to the petroleum industry."

MOTOR VEHICLE REGISTRATION IN 1930 SLIGHTLY MORE THAN IN 1929

Motor vehicles registered in the United States on January 1, 1931, represented an increase of only six-tenths of 1 per cent over the number in service on January 1, 1930. The smallest gain previously recorded was 5.1 per cent in 1927. In 1929 it was 8.2 per cent.

While the rate of increase has been declining steadily since 1923, and this trend will continue, 1930 was an abnormal year in several respects and the exceedingly meager advance in registrations should not be used as a gauge for future measurements. In the first place, domestic sales were 1,200,000 less than in 1929 and, in the second place, many thousands of motor car owners, hard pressed for funds, felt too poor to put their cars into service.

Because of the second of these factors, says Motor magazine, too much emphasis should not be attached to what might seem a record-breaking number of replacements. This figure would appear to be about 2,500,000 but the undetermined number of cars owned but not in service must be deducted from it and a readjustment probably will be necessary a year hence.

The total of passenger cars and trucks was 26,661,596 compared with 26,501,443 on January 1, 1930. Passenger cars numbered 23,316,013 against 23,121,589, a gain of eight-tenths of 1 per cent. The truck total was 3,345,583 compared with 3,379,854, a drop of 1 per cent.

The truck loss was apparent rather than actual and was due to a change in classification in California under which commercial vehicles weighing less than 3,000 pounds were listed as passenger cars. Thus there really was an increase of about 80,000 in the number of trucks in operation with a passenger car advance of just about the same number.

Twenty states showed declines in the total of vehicles registered, 23 in passenger cars and 14 in trucks. Eleven of the states which recorded losses might be classed as southern. The other nine were scattered from Maine and Vermont to the Rocky Mountains.

Among the "big seven"—the only states registering more than 1,000,000 vehicles—New York, in first place, retained about the same lead over California in second. Pennsylvania moved into third place with Ohio dropping to fourth. Illinois continued fifth but Texas nosed out Michigan for sixth position. The next three states were Indiana, New Jersey and Massachusetts.

CAR AND TRUCK REGISTRATION FOR 1929 AND 1930

State—	Pass. cars 1930	Pass. cars 1929	Trucks 1930	Trucks 1929	Total 1930	Total 1929	Gain or loss 1930 over 1929	Gain or loss 1929 over 1928
Alabama	238,105	247,701	37,957	37,832	276,062	285,533	—3.3	6.0
Arizona	104,568	98,327	13,114	10,686	117,682	109,013	7.9	15.0
Arkansas	194,500	193,396	27,800	39,732	222,300	233,128	—4.6	8.5
California	*1,953,807	1,760,308	*89,073	214,033	2,042,880	1,974,341	3.5	9.7
Colorado	275,500	274,988	30,100	28,501	305,600	303,489	0.7	6.5
Connecticut	293,990	278,057	47,697	50,006	341,687	328,063	4.1	5.9
Delaware	45,520	44,728	10,523	10,232	56,043	54,960	2.0	7.3
District of Columbia	156,034	135,455	18,013	15,995	174,047	151,450	15.0	19.7
Florida	275,196	288,684	51,549	57,293	326,745	345,977	—5.5	—2.0
Georgia	295,018	310,362	46,959	48,543	341,977	358,905	—4.7	12.6
Idaho	105,704	104,398	15,739	13,676	121,443	118,074	2.8	9.2
Illinois	1,440,000	1,411,753	209,000	203,335	1,649,000	1,615,088	2.1	7.4
Indiana	745,000	741,366	128,000	125,349	873,000	866,715	0.7	5.2
Iowa	711,150	714,919	72,430	69,531	783,580	784,450	—0.1	6.9
Kansas	511,901	507,529	83,209	73,694	595,110	681,223	2.4	8.9
Kentucky	306,000	298,716	34,500	34,132	340,500	332,848	2.3	9.4
Louisiana	227,617	234,565	44,000	46,303	271,617	280,868	—3.2	6.3
Maine	146,292	147,962	31,999	36,644	178,281	184,606	—3.3	6.9
Maryland	290,097	281,034	43,191	38,839	333,288	319,873	4.2	12.1
Massachusetts	733,824	719,436	100,233	98,268	834,057	817,704	2.0	12.6
Michigan	1,164,272	1,219,158	166,485	175,944	1,330,757	1,395,102	—4.6	11.7
Minnesota	625,154	630,703	108,813	99,696	733,967	730,399	0.5	8.8
Mississippi	221,229	217,362	35,771	32,649	257,000	250,011	2.8	1.5
Missouri	650,500	671,237	89,500	85,443	770,000	756,680	1.7	6.1
Montana	109,638	115,285	25,585	25,102	135,223	140,387	—3.7	11.4
Nebraska	366,831	375,946	52,495	42,280	419,326	418,226	0.2	6.9
Nevada	24,306	25,302	6,441	6,613	30,747	31,915	—3.6	16.6
New Hampshire	94,500	94,900	17,500	13,980	112,000	108,880	2.9	6.1
New Jersey	721,874	698,959	133,000	133,373	854,874	832,332	2.8	9.7
New Mexico	†60,848	76,000	†12,754	2,374	73,602	78,374	—6.0	19.2
New York	1,940,500	1,922,068	347,500	341,191	2,288,000	2,263,259	1.1	8.6
North Carolina	399,630	430,651	59,510	52,951	459,140	483,602	—5.0	4.1
North Dakota	155,000	162,092	28,000	25,954	183,000	188,046	—2.6	8.4
Ohio	1,534,400	1,560,182	186,800	206,432	1,721,200	1,766,614	—2.5	7.1
Oklahoma	504,813	510,401	60,750	60,390	565,563	570,791	—0.9	7.7
Oregon	‡259,500	247,131	‡23,000	21,876	282,500	269,007	5.0	8.4
Pennsylvania	1,556,548	1,515,875	242,638	217,408	1,799,186	1,733,283	3.8	5.5
Rhode Island	116,178	114,010	20,280	19,999	136,458	134,009	1.8	6.6
South Carolina	205,700	205,683	26,100	25,591	231,800	231,274	0.2	6.7
South Dakota	178,938	181,419	24,293	22,780	203,231	204,199	—0.4	6.7
Tennessee	320,000	329,697	36,000	32,734	356,000	362,431	—1.7	12.5
Texas	1,180,000	1,165,150	210,000	182,957	1,390,000	1,348,107	3.1	11.0
Utah	97,000	95,661	17,000	17,000	114,000	112,661	1.8	14.3
Vermont	78,593	84,471	8,253	8,559	86,846	93,030	—6.6	7.9
Virginia	315,000	328,525	56,000	58,680	371,000	387,205	—4.1	7.4
Washington	383,116	379,995	62,961	62,346	446,077	442,341	0.8	9.8
West Virginia	228,645	228,715	37,480	40,173	266,125	268,888	—1.0	6.9
Wisconsin	691,983	689,447	105,856	104,055	797,839	793,502	0.5	6.9
Wyoming	51,494	51,880	9,742	8,800	61,236	60,680	0.9	7.7
Total	23,316,013	23,121,589	3,345,583	3,379,854	26,661,596	26,501,443	0.6	8.2

*Truck classification changed to include as passenger cars all commercial vehicles weighing less than 3,000 pounds. †Classification revised to increase commercial vehicle registrations. ‡Partly estimated. Beginning of registration year changed from January 1 to July 1. —From Motor.

OPERATING PERSONNEL ATTENDS CONFERENCE

By Neil Williams

HOUSTON, Tex., Jan. 26.—The semi-annual conference of field foremen and storekeepers and operating personnel of the Houston office of the Rio Bravo Oil Co., held January 21 and 22 at the offices of the company, proved one of the most interesting and instructive yet held. Thirty-three field men and members of the Houston staff attended the sessions. These regular conferences primarily serve as a place for round table discussion of company operating problems.

The conference the past week included papers on the "Use and Care of Fire Equipment," by H. E. Bowman, of the Fyr Fyter Co.; "Safety Talk and Safety Statistics for 1930," by M. C. McDowell, division superintendent; "Geology of Fields in Which the Rio Bravo Oil Co. Operates," by M. E. Schwartz, chief engineer; "Outlines of Geophysics," by John M. Vetter, superintendent of the tax and land department; "Installation of Electrical Motors and Transformers," by E. L. Spaugh, chief electrician; "Review of Operations in the Saratoga Field Over a Period of the Last Eight Years," by R. V. Plyler, superintendent at Saratoga.

In addition, H. M. Lull, president of the Rio Bravo Oil Co., delivered a short talk in which he complimented the company force on work which had been accomplished and on what was being done. James Hutcheson, vice president and general manager, presided at the meetings. The company force and their wives were guests of the company at a banquet on the evening of January 21, which also was attended by G. R. Cottingham, secretary; O. M. Longnecker, treasurer, and Joseph F. Elliott, assistant secretary, of the Rio Bravo.

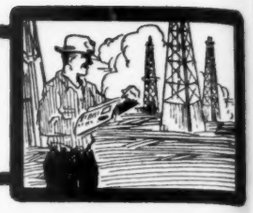
Attending the company conference were James Hutcheson, vice president and general manager; W. H. Sanders, secretary to Mr. Hutcheson; R. W. Shaw, assistant to the vice president; M. C. McDowell and S. T. Childers, division superintendents; C. L. Baker, chief geologist; M. E. Schwartz, chief engineer; J. Zaba, petroleum engineer; E. L. Spaugh, chief electrician; C. R. Dennis, accounting department; R. G. Gray, assistant land man; John M. Vetter, superintendent of the tax and land department; N. V. Seales, chief clerk in the purchasing department; I. B. Nevill, purchasing department; F. J. Harvey, chief clerk to the division superintendent; J. W. Stramler, assistant engineer; Oscar Longnecker and A. N. Huddleston, geologists; Miss Grace Newan, paleontologist; R. V. Plyler, superintendent and E. L. Craddock, storekeeper, Saratoga; W. W. Lewis, superintendent, and Walter Evans, storekeeper, Electra; W. D. Langley, foreman, and J. V. Kuhlman, storekeeper, Luling; Roxie Wright, superintendent, and R. S. Martin, storekeeper, Pierce Junction; L. E. McKinney, superintendent, and H. D. Howard, storekeeper, Spindletop; F. D. Wise, superintendent, and W. E. Morrison, storekeeper, Humbls.; W. T. Raeford, field foreman, Jacksonville; and T. S. Vandeventer, scout, Pettus.

NEW INDIAN AGENT

The appointment of Adrian M. Landman of New York as superintendent of the Five Civilized Tribes at Muskogee, Okla., has been announced by Secretary of Interior Ray L. Wilbur. The position was formerly filled by presidential appointment, but it was brought within the competitive classified civil service by an act of Congress March 4, 1929. The position has been vacant for the past five years since Shade Wallen resigned. A. G. McMillan has been serving as superintendent. Mr. Landman will take office February 1.

CLASSIFIED WANTS

Read by Oil Men Everywhere



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THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE—EQUIPMENT

TANK CARS

For lease 8,000 to 10,000-gallon cars. Immediate delivery. Write, wire or phone.
HYMAN-MICHAELS TANK LINE, Inc.
20 North Wacker Drive Bldg.,
Chicago, Ill.

100 OIL and gas engines for sale. Superior, Reid, Franklin, Foos, Black Bear and Primm 15 to 80 H.P. in fine order; new models, low prices. Edward A. Schambs, Jr., Box 868, Wichita Falls, Tex. Telephone 6356.

FOR SALE—2 No. 12 and 2 No. 11 Sweetland Filter Presses, some with monel leaves; 5 Sweetland Filter Presses, No. 9, No. 7, No. 2; 6 No. 4 Vallez Filters; 2 150 HP Fitzgibbons Boilers; 2 Skinner Unaflow Engines, direct connected to 2 200 KW Crocker Wheeler Generators, 125 to 250 volts. Installed three years; Miscellaneous Compressors, Storage Tanks, Pumps. Consolidated Products Company, Inc., 17-20 Park Row, New York City. Barclay 0600.

ATTENTION OIL MEN: We recently opened a pipe yard in Henderson, Texas. Stock of pipe consists of 1" to 15½" casing. Also have several complete rotary rigs for immediate shipment. Louisiana Iron & Supply Co., Shreveport, La., Phone 2-6385; Henderson, Texas, Phone 180.

USED EQUIPMENT

For gasoline, production, pipe line and drilling branch of oil industry. Enormous stocks of equipment to choose from at minimum cost. Let us save you money by serving as a medium through which to buy and sell your used equipment.

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16" LANDIS pipe machine. Complete, 95% new. 24"x22' Bradford lathe, 6" hole in spindle; taper attachment; complete. 12"x10" Ingersoll-Rand Type ER1 air compressor. Motor drive, complete. Also large stock of other machine tools. Five hundred machines in stock. Send for catalog. Terms to responsible parties.
Cincinnati Machinery & Supply Co.
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206,000 FEET of J.&L. 6-inch line pipe; 1,500-pound test; 3 Miller gas engines 125 h.p. direct connected to National Tansit 18x4½ pumps, 3 extra pumps same size. All kinds and sizes of fittings. All used but in excellent condition. Inquire of Pantex Pipe Line Co., Amarillo, Tex.

FOR SALE—EQUIPMENT

LUCKY NUMBER 1931
FOR SALE—Diesel Engine, 120 HP. 4-cycle 9x12, Atlas Imperial. Tank Cars four 10,000 Gallon. A. V. Konsberg, 111 West Jackson Blvd., Chicago.

45—320 Cubic foot belt-driven Tandem two-stage air compressors. High pressure, complete, like new. Cheap.

MERTES MACHINERY CO.
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WAUKESHA MOTORS

For sale — 84 Model WKS 4-cylinder, 6¾"x8", 1,000 r.p.m., rated 120 h.p., industrial type, equipped with twin disc clutch and power take-off, late series, like new guaranteed; 34 of these motors are equipped for operating on artificial or natural gas. Price $950. Mertes Machinery Co., Milwaukee, Wis.

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WANTED—Rotary with 6-inch drill pipe and tool joints, grief stem bushings, slips and break-out tongs. Give full information as to condition, location and price first letter. William H. Cater, 2643 W. Monroe St., Chicago, Ill.

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RESPONSIBLE PEOPLE WILL FINANCE Gas Line with private capital. No public financing necessary. State fully first letter giving total open flow, heat units, number acres drilled and proven, producing formation, rock pressure, drilling costs, price of gas and available market. Maps appreciated. Insure attention by stating your case fully. Address 821 Michigan Trust Building, Grand Rapids, Michigan.

EXTREME LOW DRILLING COSTS and gusher (up to 5,000 bbls.) production make Williamson County, Texas, serpentine plugs the best venture. $4,000 to $8,000. Covers entire cost of blocking and the drilling of the well. Inquiry solicited.
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OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

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We announce a new service for investors, Unit Holders, Royalty buyers, on field operation, leasing and Royalty activities, and other pertinent information, of all companies engaged in the Petroleum business. Fee One Dollar. Petro-Facts, P. O. Box 351, Oklahoma City, Okla.

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We desire to dispose of our pipe shop located in Texas, and are offering it at an exceptionally low price for quick sale. This is a complete unit consisting of one 20-inch pipe machine, one 12½-inch pipe machine, one 6-inch pipe machine, all Bignall and Keelers, gas engine, warehouse, office building and equipment, bunkhouses, railroad siding, tools, dies, cranes, various hangers, racks, etc.

If Interested, Call LD-224 or Wire at Our Expense

JOS. GREENSPON'S SONS IRON & STEEL CO.
St. Louis, Mo.

DEEDED MINERAL interest spread covers 6 tracts one under 5,000 barrel well in Rusk County new field. Write for map. ¼ mineral rights 142 acres Bee County 1,200 feet from 450 barrel well $250.00 basis. 7,905.5 acres new 10 year paid up lease ¼ royalty same term Edwards County, Texas, in active line of play $1.25 acre. Stieren & Koenig, Alamo National Bldg., San Antonio, Texas.

LOCATING INSTRUMENT: Responsive to asphalt or paraffine, oil, gas, or hidden treasures underground. Write Box E-394, The Oil and Gas Journal, Tulsa, Okla.

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If, on account of temporary prevailing conditions, your company is in need of a monthly income of from $10,000 to $60,000, it will pay you to see us. We have properties with above monthly income, and if your business is sound and well managed by officers of good repute, and you would care to expand or refinance your business, get in touch with us. References exchanged. P. O. Box 305, Fort Worth, Tex.

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HELP WANTED

WANTED: Salesmen with cars. Exclusive territory and sales helps to willing workers. Boiler and Engine Room Specialties. Liberal commissions. Able Supply Company, 2915 Rusk Ave., Houston, Tex.

WANTED immediately—Expert rotary drilling contractor for Michigan shallow gas field. M. I. Diamond, 708 Gary State Bank Bldg., Gary, Ind.

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Attention: M. C. Stone.

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P. O. Box 211 Phone 392.

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CRANE COUNTY — Cranfill drilling near Sec. 18, Blk. 28, fee $10 acre cash. 201 Ewell Nalle Bldg., Austin, Tex.

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310 Brown Building
Wichita, Kansas.

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Harry A. George
Oil Royalties
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Tulsa, Okla.
References furnished on request.

FOR SALE: 240 acre lease, 9 year, 50c rental five miles north of Eastland Oil Co. drilling test, Schleicher County, Texas. Good geology. Price $5.00 per acre. P. O. Box 562, San Angelo, Texas.

DISTRESS offerings in oil and gas production, royalties, leases, lands, homes, big security on loans, notes discounted. These offerings are bargains under any conditions. Write me fully. E. B. Reeves, Alanreed, Gray Co., Texas.

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ROYALTIES—PRODUCTION

OKLAHOMA OIL ROYALTIES
Royalty Sales Company
Suite 523 105 N. Clark St. Chicago.

ROYALTIES UNDER GAINES COUNTY, Texas, drilling well; also under well now starting Ritz Pool, Shell Block, McPherson County, Kansas. Also many others. Lists and maps. James R. Haynes, Grantville, Kansas.

$12.50 BUYS DEED PART oil 2 Oil Royalties City Pool. Ed Milam, Dept. Y, Oklahoma City, Okla.

ROYALTY BARGAINS in Oklahoma, Lincoln and Pott Counties for sale. American Inv. Co., 201 Elks Bldg., Oklahoma City, Okla.

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NEBRASKA ROYALTY CO.,
Box 5, South Omaha, Neb.

YATES POOL
1/256th interest entire section 14, blk. 194. 5 undivided acres section 28, blk. 178, Pecos County. Mrs. Victoria Andrews, 3408 Twentieth St., Gulfport, Miss.

ROYALTY SACRIFICE. Will sell all my royalties for $5,000.00 cash. A total of 1,545 full royalty acres undivided under 88,041 acres in forty-five different counties and five state. Address Box E-398, The Oil and Gas Journal, Tulsa, Okla.

ROYALTIES—PRODUCTION

KANSAS ROYALTY: Interest under four drilling wells, Ritz Pool, Shell Block. Prices reasonable. Maps free. Harry Haynes, Grantville, Kansas.

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SHALE GAS ACREAGE
For sale proven shale and gas 2,500 acres Labette County, Kansas. Also ⅛ to ½ interest in well N. E. Schurr Pool, Rice County, Kansas on core drilled structure. Also royalty under well and offset.
G. W. MOORE,
Independence, Kansas.

WYOMING Oil Royalties, leases, structurally located drilling acreage, proven acreage, production. Owner, Box 666, Basin, Wyoming.

ROYALTIES IN RUSK, GREGG and UPSHUR Counties, Texas, and many others East Texas. Send today for bargain list. James R. Haynes, Grantville, Kansas.

OIL ROYALTY SPREAD, acreage on structure in Major Company's block new field Rusk County, Texas. Deeded royalty interests $100.00 each on deferred payment plan. Cash $30.00 and $10.00 per month. Address Guy J. Stumpff, Consulting Engineer, Box 404, Kilgore, Tex.

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IF YOU WANT your securities or proposition intelligently submitted to underwriting and security selling houses in New York, write W. W. Hines, Room 803, 150 Broadway, New York City.

CAPITAL: An experienced dependable broker will aid in financing projects of merit. Amster Leonard, East Orange, N. J.

Gasoline in Fair Demand in Chicago

Exceptionally Good Motoring Weather Aids Sales but Retards Demand for Burning Oils. Prices Generally Unchanged

By John B. Waldo

CHICAGO, Jan. 26.—Gasoline began the week with fair sales but hardly as large as a week ago. Shipping instructions for the coming month are being received from contract customers in fair amounts but the spot business is hardly as active. Many jobbers have purchased in the spot market for the January needs and are not yet ready to place their orders for February. Prices are still unchanged with major refiners quoting a nominal spot price for their U. S. Motor grade of 5 cents Group 3, but others are selling freely at 4¼ to 4½ cents with little going at above three-eighths.

Gasoline consumption is running ahead of last year and were the cars being used as freely, the record would be even better on account of the much better road conditions this year. More active efforts are being made by the Group 3 refiners and the brokers in that section to sell gasoline in this territory than was noted a week ago. Some of the offers come from plants which have just recently started refining after long shutdowns.

Prices have been named as low as 4⅛ cents for 60 navy and 4¼ cents for the full 400 endpoint. These prices have been quoted for the U. S. Motor gasoline, the quotations being for February delivery in fairly even shipments. These prices so far as known have been named to marketers and are supposedly for resale although some refiners quote the same price to the larger jobbers and in some cases the latter state they have had the prices named to them. It is believed that these quotations arise from refiners who have been closed down and desire some orders to get their plants started and are possibly for gasoline that is off color to some degree.

Kerosene continued to move slowly this morning. The furnace oils were in fair demand as a whole although many distributors were so far behind on shipments that the refiners were anxious for shipping instructions. Many dealers report that they have from a few cars up to nearly 50 cars on their tracks. There were no important requisitions for fuel oil for February received this morning. The last big order was that of the Illinois Steel Co. for 400,000 gallons which was taken by a local refinery at a price which for comparison figures 55 cents out of the Group. This is considered an unnecessarily close price for the high grade of oil required.

Gasoline Stronger

Last week was one of fairly good progress in this market in regard to the gasoline situation. There was little change in other products. The gasoline market was really stronger than it might appear to be on the surface. The advance in prices was just about one-quarter cent for U. S. Motor gasoline. But the market was more firm at the end of the week on the basis of the higher price than it was at the beginning of the same period when prices were shaded a little and, if these low prices are considered, the advance during the week might be called three-eighths of a cent. The sellers were beginning to have more faith in their product. One of the local sales managers mentioned an incident that occurred in his own business. His Indiana salesman called him on long distance, and told him he could get an order for four cars by making a price of 4 cents for U. S. Motor, but that was all his customer would pay. The manager told him his price was, as the salesman knew, now 4¼ cents and that this was a low price for the present market. Told him why it was a low price and then said if it was a question of losing a customer he could go to 4⅛ cents but to go back to his customer and try to get the business at 4¼ cents. He then showed a wire giving the order for the four cars at 4¼ cents. This is one of several instances where the refiner has been able to advance his price to customers who claimed they were able to buy for less. The buyer is not to be blamed for trying to buy as cheap as possible but the refiner is certainly to be at least pitied who does not have a bottom price below which he will not take an order.

A good part of the strength in this market was due to the purchase by the Standard Oil Co. (Indiana), of some 500 cars of U. S. Motor gasoline out of Oklahoma. Of course the quantity is not large, all things considered, but it did show the way for other large companies to act and it is expected that not only The Texas Company and the White Eagle and other large companies will buy at least from each other and in this way prevent any accidental accumulations of gasoline from being marketed as distress material. There are numerous instances at the present time of large companies buying instead of refining their gasoline and right now the Standard of Indiana is not the only Standard company which is buying gasoline instead of operating its plant and the management claims it is making more money doing so.

Demand Fairly Active

The gasoline demand was fairly active for the time of year and the lateness in the month. More and more gasoline is bought on a monthly basis and then if the quantity is too small more is added as needed.

The bulk of the business continues to be on contract but there was a very fair spot business during the week. There was some buying for storage but it is a little too early for much of this and jobbers will not buy large quantities this season who have previously done so, as it ties up too much of their working capital, under slow collections. The small jobber is really placed in a bad position by the condition of the trade in the country districts. He is unable to extend the same credit granted by the larger companies, at least by some of them, and this practically drives a lot of his regular customers who are unable to meet their accounts promptly into the hands of the concerns which can extend credit for a longer period and carry the trade for a larger amount. About the only thing left for the smaller jobber to try and get as much of the business as he can from the prompt paying customers and frequently this is done by a cut in the price of his gasoline.

Four of the largest distributors in this territory are now handling Ethyl Gasoline and practically all of the ethical smaller dealers. The only exception in the ranks of the larger concerns is the Sinclair Refining Co. It has been stated that negotiations were under way in that case but nothing definite is yet reported. Ethyl Gasoline is a premium gasoline and has so completely taken the place of the higher gravities which were the former winter sellers, that there is little market for these grades. The 60-62 gravity is quite frequently sold now at the same price as U. S. Motor and if not sold at the same price, the 60-62 400 endpoint hardly commands an increase over the price for Motor gasoline of more than an eighth of a cent. The export demand for the 64-66 gravity gives this product a little better price but it is only a little better.

Natural gasoline has been more active and prices are higher especially for the "A" grade. There has been a good demand for blending naphthas. The grade selling best has been the 53-54 437 but other grades have been sold quite freely. One of the northerly oil companies has bought quite a little blending naphtha for storage. The management claims there is practically no evaporation loss from stocking blending naphtha and they can ship in natural gasoline and blend it as they need the motor fuel. This concern uses a blend of three parts naphtha to one part of the A natural gasoline and claims it is just as good and in some respects better for summer motoring than regular gasoline. Some states do not collect a tax on naphthas even when used for motor fuel and this decision has caused a much more active demand so much so that prices are very firm at an advance of at least one-half cent.

Stocks in Good Shape

Reports of price cuts by both the jobber and the refiner are common but frequently unsubstantiated. The major companies here have little gasoline beyond their needs and are said to be in the best shape as to stocks of gasoline for several seasons. Any reductions in prices are made for some other reason than to move gasoline, usually to save an old or get a new customer. There is one plan which was thought much of by those who introduced it that has turned out badly. This is the so-called "third pump," scheme. The plan was to have a pump which would deliver a lower grade of gasoline than the regular make of the company to be sold to offset the cut prices made by competitors. At first the gasoline was planned to be not quite so good as the regular but plenty good enough to compete with the cheap gasoline offered by some of the price cutters. But with lower costs for gasoline and wider margins, the price cutter sold as good and in some cases a better motor fuel than was regularly carried by the station which had the third pump so that the gasoline sold without a brand or name by the station through the extra pump is the same gasoline as is sold at the normal price and the station attendant has so frequently solicited the business of the motorists who want cheap motor fuel on this basis that every one in any town where there is a station equipped with a third pump knows that it is the regular gasoline. The result is that some of the large distributors who frown on any deviation from the normal price are price cutters and the cause of more price cutting.

Kerosene and Distillates

Kerosene and distillates have been quiet as to demand and a little easier as to price. Some very good kerosene has been sold at 2⅞ cents to the trade by marketers who are moving the stock of some refinery which has a surplus to get rid of. The distillates have not moved as well as hoped for and here, too, some distillate has been sold at a decided reduction in price. Some refiners have just about given up hopes of any large demand this winter owing to the mild weather and are already beginning to reduce their stocks not only of distillate but of all furnace oils as well. The furnace oil season has proved a disappointment to the oil men and they are already showing an impatience, which might better wait until the season has more nearly ended. We still have ahead of us two of the worst months of the year in the matter of snow and bad weather and the consumption of furnace oils may be much heavier during these months than it has been so far any month this season. But those who are reducing their stocks at the refinery say if they wait for another month, if the weather is still mild, everybody will be reducing their stocks and the prices will suffer.

Gas Oils

The demand for zero gas oils is still good although most distributors are simply ordering against contracts which they have not been able to get down to as low a point as the refiners would like to have them. The consequence is that there is little spot demand. Supplies are light and in the light colored zero oils there are no free stocks to be drawn on so the refiner and tank car dealer have frequently shipped distillate or even kerosene on orders for straw gas oil. Most of the spot buyers in this city, which includes some of the largest distributors, have large stocks and are out of the market so that there is little spot buying. Prices are maintained for all zero gas oils although some refiners are inquiring regarding the prospects for a further demand, evidently watching the stocks and contracts closely. The demand for the straightrun gas oil still is slack. The gas companies are securing what oil they need direct for the most part from refiners who are willing to shade the price a trifle to get the business. One of the larger of our local refiners is still quoting 2⅛ cents but good oil is being offered from Oklahoma and Texas at 1¾ and even at 1¾ cents, Group 3. This oil can be used later for cracking stock but apparently refiners do not care to wait until the time comes for increasing their gasoline output but prefer to get rid of it at the present prices.

Fuel Oil

The quantity of heavy, low sulphur, zero oils is decreasing quite rapidly judging from the number of fuel oil dealers who have been prevented from bidding on some of the going contracts by their inability to cover their requirements or to get a real firm offer of the oil wanted. In this connection, there has been a good deal of comment recently regarding the poor systems of oil burning which are still used by some of the largest consumers of fuel oil. One of the great steel plants is still obliged to specify a very low viscosity oil for the reason that its equipment will not handle a stiffer oil. The pipes are really too small, there are no returns, just stub ends, and the pumps too weak. They have no preheating system. This company has a department from which expert engineers will be sent to consult with a customer and show him the best way to design a job. It has been suggested that during some quiet period they be given the task of improving the company's own oil burning system. The company has an inquiry out for a large quantity of oil on which the saving which might be made if it could burn a less high grade fuel oil would be $8,000. It would not take many orders at this rate to pay for the changes needed to give the mill an up-to-date system which would give them an even more intense fire.

The grades on which the shortage is most felt at present, are the 16-20, the 18-22 and up to the 24-26 gravity. There is a good demand for these oils and very little low sulphur, zero oils are obtainable. The consequence is that the number of bidders is limited and did they but know it, these bidders could get better prices than they are asking. Generally there is some improvement in the demand and a stiffening in the price for immediate delivery. The feeling among some of the buyers seems to be that prices will shortly ease off a little, even if the time has not come when zero oils will cease to command a premium. These buyers talk of a larger production due to a modification of the proration rulings in Oklahoma and elsewhere. This may be true or not but it will take some time for the smaller plants which today are having difficulty in securing the crude which they need to get ready to run even if the fields are run wide open, so that prices seem likely to hold for at least a while yet. Still there is a tendency to

(Continued on Page 198)

Definite Improvement on East Coast

Further Strengthening in Undertone Expected to Accompany Constructive Efforts of Refinery Curtailment Program

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Jan. 26.—Definite improvement has been witnessed in the position of the eastern gasoline market during the week and with the industry here just beginning to feel the constructive effects of the refinery curtailment program, a further strengthening in the market undertone is looked for in the immediate future. The entire market fabric appears to be tightening, and, while price advances have not been conspicuous, there has been a decided trend toward the maintenance of posted prices, and with few exceptions, radical price shading seems to be a thing of the past.

Bullish sentiment in the motor fuel market received further impetus late in the week with reports that several of the large integrated companies had entered the Mid-Continent market for substantial quantities of gasoline. Large purchases tending to clear up burdensome refinery surplus stocks in Group 3 territory, it is felt here, will react favorably upon the local market situation.

The condition of retail markets in the East has shown a pronounced improvement during recent weeks. Price cutting has been minimized to a considerable extent, and the abolition of special discounts has had a marked influence in restoring trade confidence in the gasoline situation.

Volume of business is holding up well, and with the price structure strengthening, bearish views engendered by the heavy year-end inventory write-offs is giving place to a feeling of confidence that 1931 is to witness a real recovery in the position of the petroleum industry in the Atlantic Seaboard territory.

Refinery Gasoline

An optimistic feeling pervades the market, and the posted price of 7 cents is being closely adhered to, the statistical position of the market in this respect being firmer than for some months. Demand for spot gasoline has continued unusually active, the open winter in many parts of the territory having greatly stimulated gasoline consumption.

Improved market conditions in the Mid-Continent have been reflected by a favorable reaction in the East Coast situation, and it is felt continued improvement in these other refining centers will aid materially in the stabilization of local markets.

All of the principal bulk sellers in the New York harbor district now quote U. S. Motor gasoline in tank car lots at 7 cents, with the single exception of Richfield, which quotes its California product at 7½ cents.

There is some talk in refinery circles regarding the possibility of an early increase in posted prices for U. S. Motor, and it appears to be generally felt the market will be on a 7½-cent basis in the near future. This sentiment is naturally reflected in increasing confidence on the part of marketers and many jobbers are filling storage in anticipation of a higher market. Cancellation of many special discounts, etc., has given unmistakable evidence that the gasoline marketing situation is more in hand now than has been the case for many months.

Gasoline stocks held at East Coast refineries recorded an upturn during the week ending January 17, stocks on that date totaling 6,177,000 bbls., an increase of 387,000 bbls. over the holdings at the close of the previous week.

Substantial improvement has developed in the marketing end of the business since the start of the year, and the general mark-up of 1 cent in New York and New England, together with the cancellation of many special concessions formerly offered, has definitely improved the market position.

Leading marketers are evidently determined to stabilize the retail end of their gasoline business before the spring season gets under way, and the firm steps already taken have advanced their program materially. At the start of the year, many in the trade believed it would take the better part of the first six months of 1931 to restore stable conditions in retail markets, but progress already made indicates this stability should be apparent well within the current quarter.

Favorable weather conditions have made for a heavy consumption of motor fuel over the territory during the week, and sales have shown an increase on both premium and ordinary grades of gasoline. Prices at service stations have reflected the recent increase of 1 cent in tank wagon schedules, and, while price cutting is still more or less general in the metropolitan area, the concessions offered are by no means as sweeping as last month, and the market appears to be slowly working back to the point where posted prices will prevail.

Agitation on the part of the American Petroleum Institute for uniform laws governing the enforcement of state gasoline taxes is expected to be a potent factor in restoring stability to the situation in New York. Although state officials have been campaigning against gasoline "bootlegging," it is reported this practice has developed into an organized "racket" here, as well as in Chicago and other large cities, and it is believed the marketing of this gasoline in evasion of gasoline tax laws has been no small factor in the spread of price cutting among small independents.

Kerosene

Cold weather has made for continued activity in the kerosene market, and a steady undertone prevails at the refineries. The posted price of 6½ cents for 41-43 water white in tank car lots is still being shaded by one-quarter cent, but even the inside price represents an advance over prices at which business was being done a few weeks ago. Refiners are continuing their program of curtailment of kerosene output, and are endeavoring to get refinery holdings down to working stock levels.

Tank wagon distribution of kerosene has run into satisfactory totals, and the market is in fairly steady position. Competition which had developed at several up-state points appears to have been taken care of by the reductions put into effect during the previous week.

Pennsylvania refiners are affording New York sellers considerable competition at some points where Pennsylvania shipments enjoy a freight advantage over shipments from the New York harbor area, however, but marketers are not finding this competition sufficiently strong to warrant any general lowering of the tank wagon price schedules.

Paraffin Wax

Sellers are showing slightly firmer price views on fully refined, and the market is quoted one-eighth cent higher on 133-135 a.m.p. at 4⅜ cents per pound, with other melting points notably unchanged.

Notwithstanding heavy stocks at refineries, sellers are disinclined to grant price concessions and are evidently under the impression they can hold at present levels until buyers are forced into the market. Inquiry is more spirited, and there appears to be a 50-50 chance the refiners will win out in the "waiting contest."

Lubs

The cylinder oil market is still in unsettled position, and bright stocks are down a cent on both the light and the dark at 25 to 26 cents, and 23 to 24 cents, respectively. Refiners are disposed to grant concessions on all grades of cylinder oils where buyers are willing to take large quantities, but thus far none of this large-lot buying has made its appearance in the local market.

Reports that a leading national distributor had placed contracts in the Bradford-Allegany district for substantial quantities of lubricating oils for delivery over the year have brought about a better feeling in the market, and this transaction, if fully substantiated by later developments, is expected to take considerable quantities of cylinder oil off the market and aid in effectively re-establishing the market on a stable basis.

Aside from regular movements of cylinder oils abroad by integrated companies with foreign marketing subsidiaries, the local export market has been extremely dull since the beginning of the year, and no indication of any early upturn in business is seen. Domestic sales, however, are expected to show a turn for the better shortly as compounders come into the market for stocks for their spring and summer requirements.

Quiet trading continued in the market for red and pale oils, with prices unchanged.

Gas Oil

Spot movement of 28 plus recycled gas oil is well maintained, with prices unchanged. The posted price continues 5¼ cents, bulk, refinery terminals, with various sellers shading the market all the way down to 4¼ cents. Contract withdrawals by industrial consumers have been heavy during the week, with continued active demand looked for from this quarter for the balance of the winter season.

Fuel Oil

Fundamentally the fuel oil situation has shown no change, but sentiment is somewhat improved, and refiners are more optimistic regarding the outlook for maintenance of current price levels.

The statistical position has shown further improvement, with stocks on hand at East Coast refineries totaling 8,553,000 bbls., as of January 17, compared with holdings of 8,771,000 bbls. the previous week.

Improvement in the fuel oil situation in the Mid-Continent area and at the Gulf has also brought about a feeling of greater confidence locally. Gulf sellers have advanced their prices 5 cents per barrel, and continued firmness at that point will lessen selling competition in East Coast markets.

Locally, refiners are quoting bunker "C" unchanged at $1.05 per barrel, in bulk, at refinery terminals. Contract deliveries have been well maintained throughout the week, and spot sales have also shown moderate improvement. Industrial demand, refiners report, has shown an encouraging recovery, and considerable interest is shown in offerings for delivery during the next few months.

Diesel Oil

Recent price cuts at East Coast and Gulf terminals have apparently satisfactorily readjusted the market to changed conditions, and a fairly stable tone is in evidence. Refiners are quoting at $1.85 per barrel, bulk, at refinery terminals at principal East Coast ports.

Some improvement is reported in the shipping industry, and it is reported a number of Diesel-burning vessels which have been laid up for several months will shortly be placed back into service. In addition, a number of new Diesel-burning vessels are scheduled to enter the New York run during the first half of 1931.

Export Markets

The week was without feature in the Gulf export market, no cargo sales being reported in the open market and no new inquiries coming through from abroad. The strengthening in gasoline markets appears to have come somewhat as a surprise to export buyers, who are apparently remaining out of the market to test out the firmness of present asking prices.

There was an inquiry for a cargo of Venezuelan crude, but this business had not been closed. The market is quoted at 77 cents per barrel for Venezuelan crude, 17 gravity minimum, f.o.b. shipping terminal, but there is little of this oil available in the spot market.

New business in Mexican crude has been sluggish, and the market is somewhat softer, with Panuco reported available at 52 to 54 cents a barrel at terminals, plus export taxes. The market for this oil, which has a large asphalt content, was recently quoted at 55 cents.

Petroleum Exports

New business in the local export market continued of moderate volume, and there was no appreciable recovery in export shipments of refined products out of the local port. Inquiries from abroad for products for early shipment continue of small amount, and little interest is being shown in oil for later deliveries.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Jan. 17	Jan. 10	Jan. 3
Gasoline	75,000	15,000	20,000
Naphtha	60,000	20,000	420,000
Kerosene	40,000	165,000	145,000
Fuel oil	120,000	5,000	5,000
Lubricating oil	728,000	1,405,000	1,410,000
Petroleum, ref.	170,000	50,000	930,000
	Pounds		
Petrolatum	.....	10,000	123,000
Paraffin wax	1,400,000	1,450,000	1,430,000
Refined	50,000	180,000	175,000
Scale	685,000	90,000	390,000
Lubricating grease	1,130,000	565,000	640,000

There is practically no speculative interest among export operators, the unsettled state of the refined products market having effectively discouraged long committments, and the recent firming-up tendency having acted equally well as a deterrent to short sales.

Charter Market

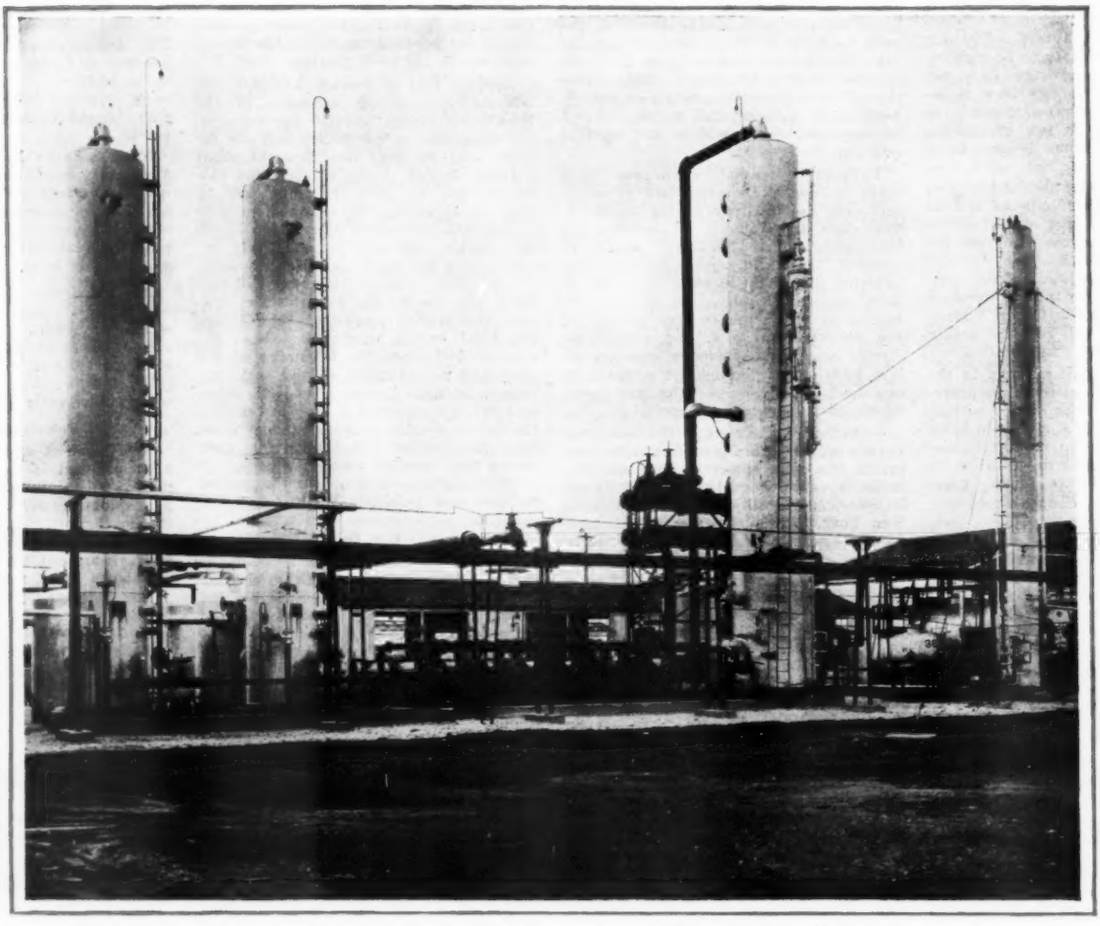
A quiet market for tankers is reported for the week ending January 24 by Funch, Edye & Co., with the principal development an inquiry for tankers to move black oil from Aruba to Teneriffe, where the new refinery of the Spanish Petroleum Monopoly is situated.

"Little business for clean tankers is offering and the market continues generally dull," says the Funch, Edye report. "The only fixtures reported this week are two vessels taken for account of Black Sea charterers and a clean Danish ship closed for a cargo of molasses from Java to United States. Definite business is in the market for black oil, March loading, for single or consecutive voyages, Gulf/Ostermoor and Aruba/Teneriffe. There appears to be a better demand for this class of carrier. No fixtures are reported in the American intercoastal or coastwise trades, but with

(Continued on Page 198)

Braun

VAPOR RECOVERY PLANTS



The first of 3 Braun vapor recovery plants in Sinclair Refining Company's Houston refinery. This plant has been in operation 14 months. Increased refinery throughput has necessitated the installation of 2 additional similar but larger plants which will be placed in operation at the same location shortly.

C. F. BRAUN & CO., INC.

ALHAMBRA, CALIFORNIA

HOUSTON NEW YORK · TULSA

Manufacture of Natural Gasoline

Location of Fuel Line Important in Blending Problems

Improvement in automobile design, specifically in connection with the fuel line to hold the increment of heat from rear tank to combustion chamber to a minimum, is advanced as the most important step toward eliminating vapor lock, in a paper presented by Oscar C. Bridgeman and Hobart S. White, of the Bureau of Standards at the annual meeting of the Society of Automotive Engineers, at Detroit, Mich.

Mr. Bridgeman is research associate at the Bureau of Standards, Washington, D. C., and Mr. White is junior physicist at the bureau. The method used in reaching this conclusion and the significance of the tests made in relation to the responsibility shared by the gasoline producer and the automobile manufacturer in the vapor lock problem, follow:

Twenty-seven automobiles were used in making the tests. Interchangeable resistance-thermometers (thermocouples) fitted into specially constructed pipe-fittings were inserted in the fuel feed line of each automobile. Points at which temperature data were obtained were:

1. Vacuum Tank Systems—Fuel tank outlet, vacuum tank inlet, vacuum tank outlet, carburetor inlet, carburetor bowl (in some instances).

2. Fuel Pump Systems — Fuel tank outlet, fuel pump inlet, fuel pump outlet, carburetor inlet, carburetor bowl (in some instances).

3. Gravity Feed Systems—Tank outlet, sediment bowl outlet and carburetor inlet.

All fuel temperatures were recorded as temperature increases above atmospheric. In most of the tests constant speed runs at 20, 30 and 40 miles per hour were made, although some were at constant speeds of 25, 50 and 60 miles per hour and over. Each constant speed run was of such duration that the temperature at each point reached a maximum and remained constant. Tests made while the motor idled were of such duration that the temperature at each point reached a maximum and then dropped. Temperatures were also recorded in hill climbing and towing tests.

It was found that the gasoline in the fuel tank is considerably above that of the atmosphere, about 18° F., on an average. In going from the fuel tank to the

(Continued on Page 198)

FIVE DIVISIONS FOR STANDARDIZATION WORK

At a meeting of the tankage subcommittee of the general standardization committee of the Natural Gasoline Association of America the work of tankage standardization was divided into five major subdivisions. H. A. Ells was made chairman of the tankage subcommittee.

Each subdivision was assigned to each member of the subcommittee. The following divisions and chairmen were announced:

1. Construction—Dimensions of fabrication, weight of material, test pressure and connections. W. O. Morse, chairman.

2. Foundations—(a) Concrete. (b) steel. (c) vertical and (d) underground. (a) Spacing and (b) location from plant. H. A. Ells, chairman.

3. Painting—(a) Specification and (b) color. A. Ayvazion, chairman.

4. Safety Devices—Pop valves, fracture plates, vacuum relief valves, gauge glasses, miscellaneous safety devices and snuff lines. Ivan Salnikov, chairman.

5. Piping—Headers and gate valves. H. T. Sears, chairman.

MANY ECONOMIES EFFECTED BY USE OF NEW CASINGHEAD GAS CONTRACT

By E. C. Le Fevre
Empire Oil & Refining Co.*

Many companies have made use of the Standard Form of Casinghead Gas Contract for the past six months. Its favorable reception and continued use definitely prove its soundness and fairness.

A standard model casinghead gas contract is a matter of great importance to the oil-producing and natural gasoline companies of the oil industry. Realizing generally, the need of such an instrument, and the benefits to be derived from its use, a committee representative of numerous oil-producing companies and natural gasoline manufacturers, was appointed by the Natural Gasoline Association of America, and assigned the task of developing an agreement which would be equitable and applicable generally to modern operations.

The completion of the task represents a tremendous amount of work and study on the part of the committee. Fully aware of the purpose of its labors, the committee to the greatest extent possible, endeavored to incorporate, together with the already more or less standardized provisions universally written in such agreements, those desirable features of all current casinghead gas contract forms which were available to the committee for examination. The suggestions and criticisms which were offered by representatives, legal and producing, of the member companies, were also fully considered.

Advantages of Contract

To those who are not already familiar with the standard model of casinghead gas contract, a hasty examination will suffice to indicate the advantages (in particular those which follow) of having such a form available.

1. Printed and stocked by the Olds Press of Tulsa, thus reducing to a minimum, the stenographic time necessary in the preparation of these relatively voluminous agreements.

2. Modifications or additions can appear only in the spaces provided for same. Once acquainted with the provisions of the standard contract, it is a relatively easy matter for any one to quickly ascertain or determine the complete terms of the contract under consideration. The use of the standard contract therefore eliminates the many hours of study necessary by legal and executive departments before such agreements on individual forms, can be conscientiously approved and executed.

3. Compared with the average percentages of the departmental schedule, the percentages as stipulated by the standard contract, are essentially the same for equivalent qualities of gases.

The standard contract, however, provides for a settlement based on the actual gross value of the gasoline contained in the casinghead gas delivered instead of an approximation of such gross value.

The fairness of settlements logically based on the gross value of gasoline contained, is obvious to those who are acquainted with the difficulties and disagreements, oftentimes arising from the application of the departmental schedule or some of the common modifications thereof. The inherent disadvantage of the departmental schedule, or any schedule in fact, to a certain extent, is the method of settlement based on the quantity of gasoline contained to the nearest half gallon, and the value per gallon of said gasoline to the nearest whole or half cent, a procedure which even though averaged for a considerable period of time, does not always result in a settlement equitable to the producer and gasoline manufacturers.

Departmental Schedule

A study of the departmental schedule, a portion of which is analyzed and herewith given, will illustrate this feature. In general, the following statements will hold true for the remainder of the schedule. For the sake of ready comparisons, the percentage rates have been added to the schedule opposite the rates in cents per 1,000 feet of casinghead gas. An examination of these figures clearly indicates the wide variation in the percentages stipulated for gas of a given quality, and the sales prices of gasoline shown. The variation is especially noticeable for gases of relatively low gasoline contents.

Column headed one-half gallon applicable to gases having a gasoline content under 0.75 per 1,000 feet shows a variable percentage rate ranging from 15.38 per cent as the minimum to 25 per cent as the maximum. The average rate, however, is approximately 20 per cent. In a similar manner, columns headed 1 and 1½ gallons, applicable to gases of gasoline contents ranging from 0.75 to 1.75, also show a range of variation of approximately 10 per cent, but an average rate of approximately 25 per cent. Variations in the other columns, although not so pronounced, are also noticeable. The average rate, however, is 33⅓ per cent.

The plan of settlement stipulated by the standard contract, based on a definite percentage rate for gas of any given quality, agrees with the average rates of the departmental schedule, and is recognized as fundamentally sound and without doubt entirely eliminates the many disadvantages common to the application and operation of schedules.

*Superintendent, gas contract department.

DEPARTMENTAL SCHEDULE
Basis of — oz. pressure

Sale price per gal. or less	Gasoline content in gallons per 1,000 cubic feet: ½		1		1½		2		2½		3		3½	
	Price in cents per 1,000 cubic feet													
6c	¾c	25.00	2c	33.33	2c	22.22	4c	33.33	5c	33.33	6c	33.33	7c	33.33
7	¾	21.42	2	28.57	3	28.57	5	35.71	6	34.28	7	33.33	8	32.65
8	¾	18.75	2	25.00	3	25.00	5	31.25	7	35.00	8	33.33	9	32.14
9	¾	16.66	2	22.22	3	22.22	6	33.33	7	31.11	9	33.33	11	33.84
10	1	20.00	3	30.00	4	26.66	7	35.00	8	32.00	10	33.33	12	34.28
11	1	18.88	3	27.27	4	24.24	7	31.88	9	32.72	11	33.33	13	33.76
12	1	16.66	3	25.00	5	27.77	8	33.33	10	33.33	12	33.33	14	33.33
13	1	15.38	3	23.07	5	25.63	9	34.61	11	33.84	13	33.33	15	32.96
14	1½	21.42	4	28.57	5	23.81	9	32.14	12	34.28	14	33.33	16	32.65
15	1½	20.00	4	26.66	6	26.66	10	33.33	12	32.00	15	33.33	18	34.28
Av. per cent		19.41		26.96		25.27		33.39		33.18		33.33		33.32

Note—Portion of the departmental schedule completed to show, in addition to the price per 1,000 feet of casinghead gas, the percentage rates represented by such prices.

OKLAHOMA CITY PRORATION

Natural gasoline manufacturers with plants in the Oklahoma City Field are directly concerned with the proposal now under consideration to increase the allowable crude oil production from 1½ to 5 or 10 per cent of the estimated potential.

On a basis of 10 per cent it is estimated that the 13 operating plants would handle 700,000,000 feet daily.

COMPLETE LARGE PLANT IN CLAIBORNE PARISH

SHREVEPORT, La., Jan. 24.—Consequent to the development of a gas field of apparently large potentialities in the deep Trinity horizon at around 4,300 feet in Sections 6 and 7-19-15, Sugar Creek area of Claiborne Parish, 15 miles southeast of Homer production, Triangle Drilling Co., associated with Standard Oil Co. of Louisiana, and Louisiana Gas & Fuel Co. (United Production Corp.), has completed a 30,000,000-foot daily gas capacity absorption plant 6 miles east of Athens. The plant will be operated by the Louisiana Gas & Fuel Co. Standard Oil Co.'s interests in the properties consist of the oil rights to the Triangle block and the Triangle is the producing member of the trio.

Plant design and equipment is very similar to the Louisiana Gas & Fuel Co. plant at Alto in the Richland Field and may be added to without disturbing the existing establishment. It operates at 500 pounds pressure with ample provision made for overload. Probably the greatest change between the Alto and Athens plants is in the boiler capacity which, in the latter, consists of three 253 horsepower water tube units. Absorbers are of the hammer welded type as at Alto and there is a recompression plant of two 200 horsepower direct connected gasoline driven units to handle the weathered gas. The same scheme of two-stage weathering used at Alto is employed.

Generally speaking the flow sheets of the two plants are identical. Inlet and discharge scrubbers are Campbell Mist Defiers and in addition to the gasoline plant proper there is a complete vapor recovery system. Loading rack and storage is located on the L. & N. W. tracks 7 miles north of the plant with which it is connected by two 2-inch lines, one to handle the finished product and the other for delivery of absorption oil. Another 10-inch line delivers residue gas to United Pipe Line Corp.'s Richland-Monroe-Houston line. The plant was built by the Stearns-Roger Co.

The three interests owning Sugar Creek have drilled six wells four of which are producers with a total open flow of 104,000,000 feet per day of gas averaging approximately 1,900 gallons per 1,000,000 feet.

APPOINT COMMITTEES

At a meeting of the board of directors of the Natural Gasoline Supply Men's Association last week in Tulsa, M. H. Kotzebue, president, announced the appointment of chairman for several committees which will have charge of the program for the supply men at the annual meeting of the Natural Gasoline Association of America to be held in Tulsa during May. The following chairmen were appointed: Smoker, M. F. Waters; annual dance, A. J. Kerr; lunch, E. H. Triphaus; tickets and programs, A. W. Burket, and membership, J. H. Satterwhite. The chairmen will appoint the other members of the committees.

CONTINUE PLANT OPERATION

The Phillips Petroleum Co. will continue the operation of its natural gasoline plant in the Artesia Field in Eddy County, New Mexico, although notice was given principal operators in the field early in the month that the plant would be shut down January 15. The change in plans was the result of effecting a new agreement between the principal producers and the Phillips company regarding supplying gas to the plant. At the present low market for natural gasoline the operation of the plant was said to be unprofitable under the original gas contract.

Brief Items for Petroleum Refiners

Elect P. C. Scullin General Manager of Indian Refining Co.

P. C. Scullin, who has been connected with the refining department of The Texas Company for the past 27 years, was elected vice president and general manager of the Indian Refining Co. at an organization meeting of the board of directors held Friday in New York City. The board action followed a meeting of stockholders held the previous day in Augusta, Me., at which several officials of The Texas Company were elected to the board of directors. The company early in the month acquired a controlling interest in the Indian company, one of the oldest independent refining and marketing companies in the Middle West, through an exchange of stock.

R. C. Holmes, president of The Texas Corporation, was elected president of the Indian company. Other officers are: F. T. Manley, vice president; W. S. S. Rodgers, vice president; S. B. Wright, vice president; E. M. Crone, secretary, and C. E. Woodbridge, treasurer. In addition to these officers, the following are members of the board of directors: C. B. Ames, Harvey Gibson, E. A. Potter, Jr., and T. Rieber.

Mr. Scullin, who will be the active manager of the company with headquarters at Lawrenceville, Ill., has served the refining department of The Texas Company in various capacities. Recently, he has been assistant manager of the refining department with headquarters in New York City and previously had been manager of the refining department in the Southwest with headquarters at Houston.

The principal property of the Indian company consists of a 15,000-bbl. refinery located at Lawrenceville. This refinery has facilities for the manufacture of lubricating oils, using what is known as the Glover dewaxing process. The cracking equipment consists of Dubbs and Cross units with a total capacity of 10,000 bbls. daily. The refinery operates with crude oil from Kentucky, Indiana and Illinois fields and is also connected to the Mid-Continent through The Texas-Empire Pipe Line Co.

In the marketing end the Indian company will give The Texas Company approximately $20,000,000 additional sales annually. The company had 150 bulk stations and 250 retail stations and more than 1,800 tank cars. The company has developed a nation-wide outlet for its motor oils with the branded name "Havoline." No changes in the operating personnel of the Indian company have been announced.

TO REBUILD PLANT

CHATHAM, Ontario, Jan. 24.—Reconstruction of the oil shale plant of Torbanite Products, Ltd., at New Glasgow, Novo Scotia, will be commenced early in the spring. The plant was destroyed by fire last October, after a short period of successful operation. The main offices of the company are in Montreal and the plant at New Glasgow is intended to utilize an improved process for extraction of petroleum products from torbanite, a high grade oil shale.

COSDEN MOVES OFFICES

CHICAGO, Jan. 24. — The offices of the Cosden Oil Co. of Illinois, which is the distributing company, have been moved to the new office building located at the bulk plant at 1300 Webster Avenue. The offices of the Cosden Oil Co. of Delaware will remain at the present address on the thirty-third floor of the Willoughby Tower.

OKLAHOMA AND WEST TEXAS CRUDES TO GULF'S PLANTS IN MIDDLE WEST

The new 6,000-bbl. plant built on Neville Island near Pittsburgh, Pa., by the Gulf Refining Co. is now receiving Oklahoma and Texas crudes through the recently completed 10-inch line of the Gulf Pipe Line Co., and preliminary runs are in progress. By May 1, the 12,000-bbl. plant being built by the company at Toledo, on the site of the old Paragon refinery will be completed and a month later the new 12,000-bbl. plant at Cincinnati is expected to be ready for operation. With these additions the Gulf Refining Co. will have a total refining capacity of 236,000 bbls. of crude daily in the eight plants located in Port Arthur, Tex.; Fort Worth, Tex.; Sweetwater, Tex.; Philadelphia, Pa.; Bayonne, N. J.; Pittsburgh, Pa.; Toledo, Ohio; and Cincinnati, Ohio.

Gradually the Gulf Refining Co. is extending its domestic marketing into the Central States to take the output of these plants. A few years ago the company's marketing was restricted to Gulf Coast points and the Atlantic Seaboard states and extended but a few hundred miles inland. Through the acquisition of the Paragon Refining Co. the company firmly established itself as a major factor in the Ohio market and the Pittsburgh and Cincinnati plants will greatly strengthen its position throughout the densely populated areas in the Ohio Valley and northward. Water transportation on the Great Lakes and along the Ohio River will be available to the new refineries at Pittsburgh, Cincinnati and Toledo.

The expansion of the marketing activities has been accompanied by the announcement that the company will soon offer Ethyl Gasoline through its stations. The new motor fuel will be known as No-Nox Ethyl.

The new pipe line supplying the eastern refineries with crude extends from Oklahoma to a point near Lima, Ohio, the oil going to the Pittsburgh plant being delivered to the Buckeye Pipe Line near Lima and thence to the Southwest Penn pipe lines at the Ohio-Pennsylvania state line.

The company's lines in the Mid-Continent have been arranged as to permit supplying West Texas crude as part of the supply going to the Pittsburgh plant and this represents the longest pipe line delivery being made by any company at this time.

East Texas Company Building New Plant At Henderson, Tex.

The newly organized East Texas Refining Co. has purchased a 50-acre site 6 miles northwest of Henderson, Tex., located on the I.&G.N. Railroad, and work has started on a refinery which will consist of a 6,000-bbl. pipe still, according to announcements made here today by F. W. Burford, president of the company. The plant, the first to be announced in East Texas since the development of the large prospective oil producing field in Rusk and Gregg Counties, will be in operation by April 1.

The office and headquarters of the East Texas company will be in Henderson.

The personnel of the company, in addition to Mr. Burford, includes J. J. Thomas, vice president, Pecos, Tex.; E. B. Campbell, treasurer, Henderson; Ralph E. Bishop, secretary, Henderson. Mr. Burford is president and Mr. Thomas, vice president, of the Burford Oil Co., which operates a 6,000-bbl. skimming and cracking plant at Pecos, Tex.

Mr. Campbell moved to Henderson this week from Pecos. Mr. Bishop has resigned as sales manager of the Crystal Oil Refining Corp., Shreveport, La.

The same interests have organized the Rusk County Pipe Line Co. and are now laying a pipe line from the Deep Rock Field to the refinery site. The pipe line will distribute the crude oil supply for the East Texas refinery and facilitate the marketing of Rusk County oil through tank cars from the 50-car loading rack now nearing completion.

NAPHTHA SALES FROM WELLS

CHATHAM, Ontario, Jan. 24.—Intimation has been given that provision for the sale of crude naphtha from the Turner Valley wells direct to farmer consumers may be included by the Alberta provincial government in forthcoming regulations governing oil and gas drilling in the province.

Cities Service May Secure Control of Richfield Company

The eventual control of the Richfield Oil Companies by the Cities Service interests was indicated the past week in the announcement of the latter company of an offer to exchange one share of its stock for four shares of the Richfield Oil Co. of California. The announcement stated that the Cities Service Co. already has a large block of Richfield stock and it is believed that with its offer of exchange that the company expects to secure a controlling stock interest. The offer for exchange expires February 25.

The affairs of the Richfield company of California earlier in the month were placed in the hands of a receiver in equity on the application of creditors. Protective committees were organized in New York City last week for holders of Richfield common stock and bonds. Another protective committee is composed of holders of preferred stock. Members of this committee are Gurney E. Newlin, former president of the American Bar Association and now director of the Security-First National Bank of Los Angeles; George T. Cameron, president of Chronicle Publishing Co., San Francisco, and Thomas W. Streeter of New York City.

It has been known for several months that the Cities Service interests were negotiating for the control of the Richfield company. If finally acquired, it will give the Cities Service Co. its first representation on the West Coast, the Richfield company being a large producer, refiner and marketer with headquarters in Los Angeles. A subsidiary company, the Richfield Oil Co. of Delaware has large marketing outlets in several eastern states where the Cities Service Co. through subsidiary companies also has refineries and marketing facilities.

The Cities Service subsidiaries in the East are the Crew Levick Co. and Cities Service Refining Co. The former has refineries at Petty Island, N. J. and Titusville, Pa., and the latter at East Braintree, Mass. Both companies have company station facilities.

Elect T. A. Dines Head of Utah Oil Refining Company

Thomas A. Dines, president of the Midwest Refining Co., Denver, Colo., was elected president of the Utah Oil Refining Co. at a meeting of the board of directors of the latter company held in Salt Lake City last week. Mr. Dines succeeds John C. Howard, who died December 16 from injuries received in a fall.

T. A Dines

Mr. Dines will continue to serve as president of the Midwest company to which position he was elected in October, 1928. Previously he had been chairman of the board having been connected with the company since its incorporation. The Midwest company which is a subsidiary of the Standard Oil Co. of Indiana has owned a controlling stock interest in the Utah company for several years and the two companies are closely associated in their operations which center in the Rocky Mountain states. Mr. Dines is a director of the First National Bank of Denver and is well known in business circles outside the oil industry.

(Continued on Page 198)

IMPERIAL REFINERIES OFFICES AT CLAYTON, MO.

General offices for the Imperial Refineries have been removed from Tulsa to Clayton, Mo., according to an announcement by W. B. Hassett, head of the organization which for several years has operated four refineries in the Mid-Continent Field. Mr. Hassett will have his headquarters at Clayton but the active management of each refinery will be centered in the cities at which the plants are located.

The offices of the Imperial Refining Co. are now located at Ardmore with J. F. Reardon, general manager and plant superintendent and J. B. Saunders, sales manager. W. E. N. Phillips is general manager and H. E. Erickson, sales manager of the Kettle Creek Refining Co. with headquarters at El Dorado, Ark.

George W. Buckner is general manager in charge of sales for the Wickett Refining Co., Wickett, Tex., and O. H. Berryman, plant superintendent. Mr. Buckner is also sales manager of the San Angelo Refining Co. with headquarters at San Angelo. Mr. Hassett is president of the four companies and his associates in the ownership are officials of the companies.

REFINERY QUOTATIONS HAVE FEW CHANGES

(Continued from Page 32)

Oklahoma and Kansas at this time unquestionably will result in lower posted prices with the probability of "bootleg" crude oil which will be sold to small buyers at distress prices. Detailed discussions of the crude oil situation in Oklahoma and other important Mid-Continent pools will be found elsewhere in this issue.

East Texas

The new discoveries in Gregg and Rusk Counties of East Texas promise to be important factors in the Mid-Continent crude oil and refined markets. In the past crude oil developments in that section was not of direct significance because the crude oil was generally moved south to the Gulf Coast and East Coast refiners.

It is now practically certain that one of the largest fields in the history of the Mid-Continent area has been discovered with rapid development certain unless some curtailment plan is accepted. The discovery wells are within 75 miles of Shreveport and within 150 miles of Dallas, Fort Worth and other refining centers in that area. The crude oil has a gravity of from 36° to 40° A.P.I. and is easy to refine either in a skimming or cracking operation.

It is known that the Shreveport group of refiners expect to have a large supply of crude available from this area within a month. One proposition calls for the construction of an 8-inch line which would deliver crude oil from both counties with a pipe line tariff of 15 cents a barrel. It is understood that the 12,000-bbl. plant of the Crystal Oil Refining Corp. at Shreveport, which has been shut down the past year, will reopen as soon as the crude from new wells is available.

This development has direct bearing on the Mid-Continent refined market. Due to the fact that new crude oil supplies were limited there has been little expansion in North Louisiana and Arkansas refineries with some shutdowns and curtailments. Due to this fact relatively little of their output has been sold in competition with other Mid-Continent refining groups, the bulk of the production being absorbed in a local marketing territory. With plenty of crude oil at low prices available this situation would change and more gasoline and other refined products would be offered in the highly competitive areas of the Southwest and Middle West as far east as the Ohio-Pennsylvania line.

One new refinery for East Texas has already been announced and it is probable that other plants will be built and old plants enlarged in Texas if the new area produces a large supply of cheap crude. Because it promises to add to a production already oversupplied it is of importance to the refinery market generally.

Gasoline and Naphtha

The spot demand for U. S. Motor gasoline and other grades was not as active the past week as it was earlier in the month. Several refiners who otherwise would have been active in the spot market, sold their excess output to the Standard of Indiana and will not have material to offer before the first week in February.

The bottom on the U. S. Motor grade in sales to the trade was 4¼ cents with a fair movement at 4½ and 4¾ cents. From a few sources the U. S. Motor grade was available for February delivery at 4¼ cents and resellers reported offers at 4⅛ cents. The business placed for February was not large, most of the buyers and sellers preferring to await developments over the next few days.

The Texas Company was reported to have made inquiries for 400 endpoint gasoline both in Oklahoma and North Texas. It is believed that the company will make purchases for February delivery. This product is generally quoted one-fourth above the U. S. Motor grade with 390 endpoint one-eighth and 375 endpoint one-fourth cent higher.

The demand for blending naphthas has been fairly active and the same is true of 350 and 360 endpoint gasolines. The latter grades are firm at a low of 5 cents.

Natural Gasoline

Steady buying of Grade BB by a large manufacturer in Oklahoma has advanced the grade to a low of 3¼ cents. This grade early in January was slow at 2½ cents. Some sales of Grade AA have been made at 3¾ cents but the bulk of the movement the first of the week was at 3½ cents. All grades are well sold up for January delivery.

Fuels

The heavy fuels are not as strong as they were a week ago. The high cold test grades are available from several sources at prices which are from 5 to 10 cents a barrel under the going market for the zero to 10 cold test grades.

Furnace oils are moving slowly. Low and high gravity grades are available at least one-eighth cent under last week. Zero grades of from 32 to 36 gravity with a flash under 200 sold the past week at 2½ cents. Some sales of the higher gravities at 2⅝ cents were also reported.

Kerosene

No improvement in the kerosene situation is apparent. The movement is routine within same price ranges of last week. The slow demand for the prime white distillates used as furnace oils has weakened the position of kerosene.

Lubricants and Wax

Both the export and domestic demand for steam refined stock, bright stock and selected grades of neutral oils is slow. Some high cold test material has been offered with new price concessions. The demand, however, is for the low cold test grades and lower prices for the high cold test grades has not improved the movement.

Three manufacturers reported more inquiries for wax from exporters. One sale of 600 tons at 2 cents was reported. This was for the 124-126 grade in barrels.

OFFERS SUGGESTIONS FOR STRIPPER WELL AREA

(Continued from Page 36)

from long standing while being filled, and a corresponding degree of gravity, but they cost too much in the item of transportation. If the cost of transporting our product to market is too high, we must necessarily receive too little for that product as the consumer pays too much. Present competition rules out the prospect of the consumer bearing this burden and hence it must revert to the producer. Therefore, anything we can or may do that will ease the burden of transportation should react to the producers' benefit, either in better crude prices or in the retention of transportation and market.

The production of petroleum from these old wells presents, and has presented, serious problems. The margin of profit has for some time been too small. Supply and demand under our present method of unrestrained development will maintain a low crude price. We may think we have gone to the utmost limit in lowering operating costs, but after we have done the best we can it is surprising how much more we can do if necessity compels. Lowering wages, unless they are too much out of balance with wages in general, may be the easy or most apparent way, but it is far from the best, and in the long run will react through lessened market.

In some pools the producers are sharing with the pipe lines the expense of making the new connections. The pipe line company going a certain distance from their present lines for each barrel of daily production to be run, and the producers either moving his tanks to that point or bearing the expense of completing the line to his present location. Where tanks are so small as to require too frequent runs they are enlarging their tanks. Combining several small adjacent leases into a unit, either individually or jointly owned, should be well considered.

Washington County presents a very difficult condition to overcome. Beside the Prairie lines there is but one, and its lines not serving any part of a number of small pools. That line, too, is now running all the oil it can use and unless market increases the only hope of relief by it is by proration of runs. Such a method should not be disregarded, as it presents many advantages to both producer and pipe line. From parts of the fields it would be feasible for the producers to join in laying their own lines and shipping by rail.

The situation is serious, but for the most part is not hopeless. Frank and earnest co-operation in working the various problems to be solved should produce results.

NEW OFFICERS ELECTED BY ENGINEERS' CLUB

By L. G. E. Bignell

Petroleum Engineering Editor

The Engineers' Club of Bartlesville, Okla., held its annual meeting in the Doherty Men's Fraternity rooms in the Empire Building, Bartlesville, on the evening of January 20 with about 100 members and their guests present. The meeting was called to order by K. E. Beall, retiring president of the club, who introduced the new officers and then turned the meeting over to them.

A. D. Terrel of the National Zinc Co. of Bartlesville, Okla., was elected president. Mr. Terrel is a graduate of the Missouri School of Mines in the class of 1898 with a B. S. degree in civil and mining engineering. For 22 years he was connected with the New Jersey Zinc Co. in executive and metallurgical work. Since January, 1928, Mr. Terrel has been stationed at Bartlesville with the title of assistant to the president of the National Zinc Co. and is in charge of the smelter and acid plant there. He is a member of the A.I.M.E. and M.&M.S. of America and was chairman of the Chicago division of the A.I.M.E. at one time.

The first vice president of the Engineers' Club is James Porter, Jr., in the operating department of the Indian Territory Illuminating Oil Co. at Bartlesville. Mr. Porter entered the employ of the Empire companies in 1919 as a junior engineer and remained with them until 1929, when he accepted his present position.

P. R. Chamberlain is the second vice president, and is the general superintendent and chief engineer of the Dewey Portland Cement Co. of Dewey, Okla., and Davenport, Iowa.

E. G. Brua is the third vice president and for the past 13 years he has been connected with the Empire companies and is now office manager of the oil production department and stationed at Bartlesville.

The new secretary-treasurer is L. T. Gibbs, for the past five years with the Phillips Petroleum Co. of Bartlesville, Okla., and formerly with the Wagner Electric Co. Mr. Gibbs is a graduate of the University of Nebraska in the class of 1922 with the degree of B. S. in electric engineering.

A paper on "The 'Stripper' Well Situation in Northeastern Oklahoma," prepared by H. G. Ellis of the Wiser Oil Co., Bartlesville, was read by Mr. Beall and is printed elsewhere in this issue of The Oil and Gas Journal.

UNIFORM STATE LAWS SOUGHT BY OIL BOARD

WASHINGTON, D. C., Jan. 26.—The Federal Oil Conservation Board is compiling existing state statutes and other data relating to oil and gas production with a view to recommending uniform state or federal legislation in the interest of conservation, E. C. Finney, solicitor of the interior department, stated before the house appropriations committee. It is hoped, he said, that the recommendations will afford equitable and just protection for the natural petroleum resources of the country.

Mr. Finney appeared before the committee seeking an appropriation of $20,000 for the board for the fiscal year 1932. This sum, said Mr. Finney, will enable the board to further the policies of President Hoover and Secretary Wilbur for conservation of the country's natural resources.

The board is also giving a good deal of its attention to the refining branch and expects to continue to do so for the next year, Mr. Finney declared.

Since enactment of the unit operation law last summer, three unit development plans have been negotiated. One of these, covering Little Buffalo Basin gas field in Wyoming, has been completed, the second and most important—that of Kettleman Hills—will be consummated upon the affixing of signatures of the operators and Secretary Wilbur, and the third is the Sand Draw gas field in Wyoming.

In urging the appropriation, Mr. Finney stressed the importance of the work being done by the board, declaring there exists a tremendous overproduction of oil and that the operators look to the oil board for leadership in conservation.

Edward C. Rochester, secretary of the board, stated that suggestions advanced operators by the board in many districts have resulted in lessened production. There has been a gradual decrease, where production now more nearly balances consumption requirements.

Recently Secretary Wilbur stated that the only lasting remedy for the oil situation was a compact between the oil-producing states approved by Congress.

ENGINEERING SOCIETIES WILL MEET AT OIL SHOW

LOS ANGELES, Calif., Jan. 24.—The Pacific Coast divisions of the various engineering societies whose members are active in the several branches of the petroleum industry have set the dates for meetings during the Second Annual Oil Equipment and Engineering Exposition to be held here from March 16 to 22. This will be the only oil show during this year. The discussions of operating methods and the application of equipment to meet the many problems confronting the industry are expected to attract a good attendance at the meetings. Visitors at the exposition will get the benefit of these discussions since the meetings will be open to all and every oil man—whether he is interested in drilling, production, transportation or refining—is invited to attend.

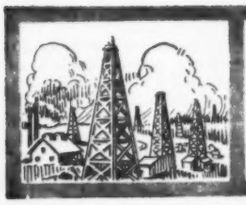
The schedule of meetings already arranged to be held in Los Angeles during the time of the exposition follows:

March 17—American Welding Society.
March 18—American Institute of Mining and Metallurgical Engineers.
March 19—American Society for Steel Treating (tentative date).
March 19—California Natural Gasoline Association.
March 20—American Petroleum Institute, division of production.
March 20—Southern California Meter Association.

All the meetings will be held at the exposition grounds except those of the California Natural Gasoline Association and the American Petroleum Institute. An assembly hall has been provided by the exposition and this will be devoted exclusively to the use of the engineering societies. It is 80'x40' and will be equipped with a permanent screen for the showing of slides or motion pictures.

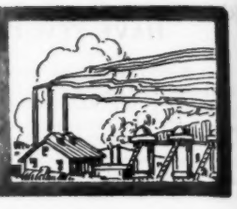
The new buildings which were erected by the Oil Equipment and Engineering Exposition to accommodate both the Annual Exposition and Permanent Exhibition of petroleum equipment have been completed. These are located at 131st Street and Alameda Boulevard, Los Angeles, and consist of the main building for the display of all types of tools and machinery, an office building for the management and an arched entrance to the grounds. An outside space of more than three acres provides ample room for derricks and heavier equipment.

All of the buildings are of white stucco and are strictly Spanish in architecture. The main building is 400'x180' with a floor space of 72,000 square feet—about 1¾ acres. This is divided into 245 booths which face on six main isles running the entire length of the building and on five cross isles extending across the width.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.



GASOLINE AND NAPHTHA

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.04¼	.04½	.04	.04¼	.04	.04¼
56-58 450 endpoint	.04¼	.04½	.04	.04¼	.04	.04¼
58-60 437 endpoint (U. S. Motor)	.04¼	.05	.04¼	.05	.04¼	.05
60-62 437 endpoint	.04¼	.05	.04¼	.05	.04¼	.05
60-62 400 endpoint	.04⅜	.05¼	.04⅜	.05¼	.04⅜	.05¼
64-66 375 endpoint	.04¾	.05½	.04⅝	.05½	.04⅝	.05½
68-70 360 endpoint	.05¼	.05½	.05¼	.05½	.05	.05¼
64-66 437 endpoint (blend)	.04	.04¼	.04	.04½	.04	.04½
NORTH TEXAS—						
50-52 450 endpoint	.04	.04¼	.04		.04	
58-60 450 endpoint	.04	.04¼	.04		.03⅞	.04
58-60 437 endpoint (U. S. Motor)	.04¼	.04¾	.04¼		.04⅛	.04½
60-62 400 endpoint	.04⅜	.04½	.04⅜	.04½	.04¼	.04½
64-66 390 endpoint	.04½	.04¾	.04½	.04¾	.04½	.04¾
64-66 375 endpoint	.04¾	.05	.04¾	.05	.04¾	.05
68-70 360 endpoint	.05⅛	.05¼	.05⅛	.05¼	.05	.05¼
64-66 437 endpoint (blend)	.04	.04½	.04	.04½	.04	.04½
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.04¾	.05¼	.04¾	.05¼	.04¾	.05¼
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.04½	.05	.04¾	.05	.04¾	.05
PENNSYLVANIA—						
52-54 Naphtha	.06		.06		.06	
54-56 Naphtha	.06		.06		.06	.06¼
58-60 Gasoline	.06	.06¼	.06¼		.06¼	.06½
60 Gasoline	.06¼	.06½	.06¼	.06½	.06½	.06¾
62 Gasoline	.06¾	.07	.06½	.07	.06¾	.07
64 Gasoline	.07		.07	.07¼	.07	.07¼
68-70 350 endpoint gasoline	.07½		.07½		.07¾	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.07	.08½	.06½	.08	.06½	.08¾
†58-62 400 endpoint domestic gasoline	.08	.09½	.08	.09¾	.08	.09¾
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.04		.04		.04	
56-58 450 endpoint	.04	.04¼	.04	.04¼	.04	.04¼
58-60 437 endpoint (U. S. Motor)	.04¼	.04¾	.04¼	.04¾	.04¼	.04¾
60-62 400 endpoint	.04½	.05	.04¾	.04¾	.04¾	.01¼
64-66 375 endpoint	.05	.05¼	.04¾	.05¼	.04¾	.05¼
64-66 437 endpoint (blend)	.04¼	.04¾	.04¼	.04½	.04¼	.04½
68-70 360 endpoint	.05¼	.05½	.05¼	.05½	.05¼	.05½
GULF COAST (Export)—						
58-60 U. S. Motor	.05⅛	.05¼	.05⅛	.05¼	.05⅛	.05¼
60-62 400 endpoint	.05½		.05½		.05½	
61-63 390 endpoint	.05⅞		.05⅞		.05¾	
64-66 375 endpoint	.06⅛	.06¼	.06⅛	.06¼	.06	

*Louisiana, Arkansas, Mississippi and East Texas delivery. †For local consumption.

NATURAL GASOLINE

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.03¾		.03¾		.03½	
Grade AA, 80.87.9, 375 e.p., rec. 90%	.03½		.03½		.03¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.03¼		.02		.02¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.03¼		.02¾		.02½	
Grade C, 80-92, 375 e.p., rec. 78%	.03	.03¼	.02¾		.02½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.03¾		.03¾		.03½	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.03½		.03½		.03¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.03¼		.03		.02¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.03¼		.02¾		.02½	
Grade C, 80-92, 375 e.p., rec. 78%	.03	.03¼	.02¾		.02½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.03¾		.03¾		.03½	
Grade BB, 84-92, 375 e.p., rec. 85%	.03¼		.03		.02¾	
Grade C, 80-92, 375 e.p., rec. 78%	.03¼		.03		.02¾	
CALIFORNIA—						
75-78 375-390 endpoint	.05	.06	.05	.06	.05	.06
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.03¾		.03½		.03	.03¼
Grade AA, 80-87.9, 375 e.p., rec. 90%	.03½		.03½		.03	.03¼
Grade BB, 84-92, 375 e.p., rec. 85%	.03¼		.02¾	.03	.02¾	.03

BURNING OIL

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.03	.03¼	.02	.03¼	.03	.03¼
42-44 water white kerosene	.03¼	.03¾	.03¼	.03¾	.03¼	.03¾
NORTH TEXAS—						
41-43 water white kerosene	.03	.03⅛	.03	.03⅛	.03	.03⅛
40-41 water white kerosene	.02⅞	.03	.02⅞	.03	.02⅞	.03
***NORTH LOUISIANA—**						
41-43 water white kerosene	.03¾	.04	.03¾	.04	.03¾	.04
***ARKANSAS—**						
41-43 water white kerosene	.03½	.04	.03½	.04	.03¾	.04
PENNSYLVANIA—						
43 Kerosene prime white	.04⅞		.04⅞		.05	
45 Kerosene water white	.05		.05⅛	.05¼	.05¼	
46 Kerosene water white	.05⅜	.05½	.05½		.05½	
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04¾	.06	.04¾	.06	.05	.06
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.03	.03¼	.03	.03¼	.03	.03¼
42-44 water white kerosene	.03¼	.03½	.03¼	.03½	.03¼	.03½
GULF COAST (Export)—						
41-43 prime white	.04¼		.04¼		.04¼	
41-43 water white	.05¼		.05¼		.05¼	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	Jan. 27		Jan. 20		Jan. 13	
***OKLAHOMA (Group 3)—**						
Below 18 gravity Fuel Oil, per bbl.	.42½	.50	.40	.50	.40	.50
18-22 Fuel Oil, per bbl.	.47½	.55	.47½	.55	.47½	.55
20-22 Fuel Oil, per bbl.	.50	.60	.50	.60	.50	.60
22-26 Fuel Oil, per bbl.	.55	.65	.55	.65	.55	.65
24-26 Fuel Oil, per bbl.	.65	.70	.65	.70	.65	.70
26-30 Fuel Oil, per bbl.	.70	.75	.70	.75	.70	.75
28-30 Fuel Oil, per bbl.	.85	.90	.80	.90	.80	.90
32-36 Gas Oil (industrial)	.02	.02¼	.02	.02¼	.02	.02¼
32-36 Gas Oil (straw color, high cold test)	.02¼	.02½	.02¼	.02½	.02¼	.02½
32-36 Gas Oil (straw color, low cold test)	.02⅝	.02⅞	.02⅝	.02⅞	.02⅝	.02⅞
36-38 Distillate	.02¾	.02⅞	.02¾	.02⅞	.02¾	.02⅞
38-40 Straw Distillate	.02¾	.03	.02¾	.03	.02¾	.03

*Prices on fuel oil above 40 cold test usually from 5 to 10 cents a barrel under general quotations.

NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.30	.40	.30	.40	.30	.40
24-26 Fuel Oil, per bbl.	.50	.60	.50	.60	.50	.60
32-36 Gas Oil (industrial)	.02	.02¼	.02	.02¼	.02	.02¼
38-40 Straw Distillate	.02¾	.03	.02¾	.03	.02¾	.03
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.70	.75	.70	.75	.70	.75
30-32 Gas Oil (low cold test)	.02⅞	.03	.02⅞	.03	.02⅞	.03
***ARKANSAS—**						
33-36 Distillate	.02¾	.03	.02¾	.03	.02¾	.03
30-32 Gas Oil	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.02¾
16-22 Refinery Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
GULF COAST (South Texas)—						
Gas Oil	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	.90		.90		.90	
PENNSYLVANIA—						
30-34 Fuel Oil	.03½		.03½		.03½	
36-40 Fuel Oil	.03½	.03¾	.03½		.03½	
CALIFORNIA—						
33-36 Distillate	.02	.02½	.02	.02½	.02	.02½
26-32 Distillate	.01¾	.02	.01¾	.02	.01¾	.02
15-19 Fuel Oil, Bunker at tidewater), bbl.	.55	.90	.55	.90	.55	.90
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.50	.80	.50	.80	.50	.80
†15-19 Fuel Oil, f.o.b. tank cars	.25	.70	.25	.70	.25	.70
27 plus Diesel, per bbl.	.80	1.05	.80	1.05	.80	1.05
30-34 Gas Oil	.85	1.05	.85	1.05	.85	1.05
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.57½	.62½	.57½	.62½	.57½	.62½
22-26 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
28-30 Fuel Oil, per bbl. (zero)	.90	.95	.90	.95	.90	.95
32-36 Gas Oil (industrial)	.02	.02⅛	.02	.02⅛	.02	.02⅛
32-36 Gas Oil (zero)	.02½	.02⅞	.02½	.02⅞	.02½	.02⅞
38-40 Straw Distillate	.02¾	.03	.02¾	.03	.02¾	.03

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.05	.05½	.05	.05½	.05	.05½
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.07		.07		.07	
150 vis., 4 color, 20-25 cold test	.06½		.06½		.06½	
180 vis., 3 color, 23-28 cold test	.08½		.08½		.08½	
180 vis., 4 color, 23-28 cold test	.08		.08		.08	
180 vis., 5 color, 23-28 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
200 vis., 4 color, 23-28 cold test	.09½		.09½		.09½	
200 vis., 5 color, 23-28 cold test	.09		.09		.09	
240 vis., 3 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 4 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
240 vis., 5 color, 25-30 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
280 vis., 3 color, 25-30 cold test	.15½		.15½		.15½	
280 vis., 4 color, 25-30 cold test	.14½		.14½		.14½	
280 vis., 5 color, 25-30 cold test	.13½		.13½		.13½	
Cylinder Stocks:						
600, steam refined, light green	.07	.08	.07	.08	.07	.08
600, steam refined, dark green	.04½	.05½	.04½	.05½	.04½	.05½
190-200 vis., D color, Bright Stocks	.25		.25		.25	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.19	.20	.19	.20	.19	.20
150-160 vis., D color, Bright Stocks 10-25 c.t.	.18	.19	.18	.19	.18	.19
150-160 vis., D color, Bright Stocks 25-40 c.t.	.17½	.18½	.17½	.18½	.17½	.18½
150 vis., E color, Bright Stocks	.17	.18	.17	.18	.17	.18
Waxes:						
124-126 White Crude Scale Wax	.02	.02⅛	.02	.02⅛	.02	.02⅛

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½	.06	.05½	.06	.05½	.06
34 Sundebloom	.05½	.06	.05½	.06	.05½	.06
36 Miners' Neutral	.04½	.05½	.04	.05	.04	.06
150, 3 color	.11½	.12	.11½	.12	.11½	.12
180, 3 color	.15	.15½	.15	.15½	.15	.15½
200, 3 color	.17¼	.18½	.17¼	.18½	.17½	.18½
220, 3 color	.20		.20	.20½	.20	.20½
600, steam refined	.08¾	.09	.08¾	.09	.09	
650, steam refined	.13	.13½	.13	.14	.13½	.14½
600, Pennsylvania Flash	.13	.15	.13½	.16	.14½	.16½
630, Pennsylvania Flash	.20		.21	.22	.22	.23
600, E filtered	.14	.15	.14	.15	.14	.15
600, D filtered, Oil City	.17	.19	.17	.19	.18	.19
Pennsylvania Bright Stocks below 35 C.T.	.18	.19	.18	.20	.19	.21
Pennsylvania Bright Stocks above 35 C.T.	.17		.17	.19	.17	
*122-124 White Crude Scale Wax	.02⅜		.02⅜		.02½	.02⅝
124-126 White Crude Scale Wax	.02½		.02½		.02⅝	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.06	.06¼	.06	.06¼	.06	.06¼
200 vis., 3 color, pale oil	.08¼	.08½	.08¼	.08½	.08¼	.08½
300 vis., 3 color, pale oil	.09½	.09¾	.09½	.09¾	.09½	.09¾
500 vis., 3½ color, pale oil	.10¾	.11	.10¾	.11	.10¾	.11
750 vis., 3½ color, pale oil	.12¼	.12½	.12¼	.12½	.12¼	.12½
1,200 vis., 3½ color, pale oil	.14¾	.15	.14¾	.15	.14¾	.15
2,000 vis., 4 color, pale oil	.15¾	.16	.15¾	.16	.15¾	.16
200 vis., 5-6 color, red oil	.07½	.07¾	.07½	.07¾	.07½	.07¾

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

200 vis., 5-6 color, red oil	.08¾	.09	.08¾	.09	.08¾	.09
200 vis., 5-6 color, red oil	.10	.10¼	.10	.10¼	.10	.10¼
750 vis., 5-6 color, red oil	.11½	.11¾	.11½	.11¾	.11½	.11¾
1,200 vis., 5-6 color, red oil	.13¾	.14	.13¾	.14	.13¾	.14
2,000 vis., 6 plus color	.15¾	.16	.15¾	.16	.15¾	.16
CALIFORNIA—						
100 vis., 2½-3 color	.09	.09½	.09	.09½	.09	.09½
200 vis., 2½-3 color	.10	.10¾	.10	.10¾	.10	.10¾
300 vis., 3-3½ color	.10¾	.11½	.10¾	.11½	.10¾	.11½
350 vis., 3½-4 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
400 vis., 3½-4 color	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12	.12¾	.12	.12¾	.12	.12¾
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Jan. 27		Jan. 20		Jan. 13	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.07		.07		.07	
Kerosene, water white, 41-43	.06¼	.06½	.06¼	.06½	.06¼	.06½
*Fuel Oil, Bunker "C," 41-43	1.05		1.05		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	1.85		1.85		1.85	
Gas Oil, 28, gravity plus	.04¼	.05¼	.04¼	.05¼	.04¼	.05¼
5 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
80 red Paraffin Oil, tank car	.12½		.12½		.12½	
50 red Paraffin Oil, tank car	.11½		.11½		.11½	
25 red Paraffin Oil, tank car	.10		.10		.10	
20 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04½		.04½		.04½	
Refined Wax:						
120-122 a.m.p., per lb.	.03		.03		.03	
125-127 a.m.p., per lb.	.03¼		.03¼		.03¼	
130-132 a.m.p., per lb.	.03⅝		.03⅝		.03⅝	
133-135 a.m.p., per lb.	.04⅜		.04¼		.04¼	
135-137 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
Petrolatum in barrels, in carload lots, per pound:						
Dark Green	.01¾		.01¾		.01¾	
Amber	.03¼		.03¼		.03¼	
Extra Amber	.03⅜		.03⅜		.03⅜	
Cream	.06		.06		.06	
Lily White	.06¾		.06¾		.06¾	
Snow White	.08		.08		.08	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	Jan. 27	Jan. 20	Jan. 13
600, steam refined cylinder stocks, in bbls..	.16½	.16½	.16½
655, steam refined	.18	.18	.18½
650, steam refined	.22	.22	.23
600, Pennsylvania Flash	.22½	.22½	.23½
650, Pennsylvania Flash	.20½	.20½	.21½
600, Warren E	.23	.23	.23½
600, Oil City E	.22	.22	.23
Light 140-150 Bright Stocks	.25 .26	.26	.26
Dark 140-150 Bright Stocks	.23 .24	.24	.24

LOS ANGELES EXPORT PRICES

	Jan. 27	Jan. 20	Jan. 13
Kerosene, water white	.04¾ .06	.04¾ .06	.04¾ .06
*U. S. Motor Gasoline, 53-55, 437 e.p.	.04¾ .07	.04¾ .07	.04¾ .07
*60-62, 400 endpoint gasoline	.06 .08	.06 .08	.07 .08½

*For coastwise and off-shore shipments.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Corsicana heavy (Oct. 28) $0.75
Other fields ..... See gravity table

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties ..... See gravity table

WEST TEXAS

Ellan* ..... Same as North Texas
Crane-Upton-Crockett, Howard and Glasscock, Mitchell and Ector ..... See gravity table, Column 3
Chalk† (April 10, 1930) $0.75

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover (all grades) (Oct. 30, 1930) $0.70
Carterville, Sarepta and Cotton Valley, below 36 gravity ..... See gravity table
Bellevue (Oct. 30, 1930) 1.00
Urania (Oct. 30, 1930) ..... .75
Calion, heavy (Oct. 30, 1930) ..... .70
East El Dorado (Oct. 30, 1930) ..... .70
Other fields ..... See gravity table

Note—Smackover and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Gulf Refining Co. and Magnolia Petroleum Co.; Calion posted by Gulf Refining Co.

GULF COAST

Grade A (Jan. 14)* $0.80
Grade B, 25° and upward ... See gravity table
Jennings, La. (Oct. 30, 1930)† ..... .80
Refugio (light) ..... Same as Grade B
Refugio (heavy) (Jan. 14)* ..... .69
Markham (Jan. 15, 1931)‡ ..... .69
High Island (Oct. 30, 1930)† ..... .75

*Humble Oil & Refining Co. †Gulf Refining Co. of Louisiana. ‡Texas Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Ilies (Feb. 15, 1930) $0.87
33 gravity and above ..... .87
Under 33 gravity ..... .85
Dutton Creek (Oct. 28, 1930) 1.01
Rock Creek, Wyo. (Oct. 28, 1930) 1.01
Salt Creek ..... See gravity table
Big Muddy (Oct. 28, 1930) 1.00
Grass Creek, heavy (July 27, 1928) ..... .90
Grass Creek, light (Oct. 28, 1930) 1.25
Mule Creek (May 21, 1929) 1.20
Elk Basin (Oct. 28, 1930) 1.25
Lance Creek (Oct. 28, 1930) 1.33
Poison Spider (Mar. 14, 1927) 1.00
Notches (Mar. 14, 1927) ..... .65
Dallas-Derby (Jan. 1, 1931) ..... .70
Hudson, (Jan. 1, 1931) ..... .75
Rex Lake (Feb. 22, 1930) 1.10
Osage (Nov. 1, 1930) ..... .85
Lost Soldier (Oct. 28, 1930) ..... .80
Hamilton Dome (Mar. 14, 1927) ..... .85
Greybull (Oct. 28, 1930) 1.25
Torchlight (Oct. 28, 1930) 1.25
Cat Creek (Oct. 28, 1930) 1.25
Pondera (Montana) (Oct. 28, 1930) 1.45
Sunburst (Montana) (Oct. 28, 1930) 1.55
Hogback (Feb. 15, 1930) 1.40
Artesia (New Mexico) (Oct. 28, 1930) ..... .75
Lea County ..... See gravity table
Border, Mont. 1.55
Red Coulee, Alberta 1.55

Note—Salt Creek, Osage, Cat Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both com-

(Continued on Page 194)

CRUDE OIL GRAVITY TABLE

Gravity—	Oklahoma-Kansas, Central and East Texas, North La.-Ark. 1	North Texas (Wichita Falls District) 2	Crane, Upton, Ector, Crockett, Winkler, Pecos, Mitchell (West Texas) Lea, N. Mex. 3	Wheeler County (Texas Panhandle) 4	Gray County (Texas Panhandle) 5	Carson and Hutchinson (Texas Panhandle) 6	Salt Creek, Wyo. 7	Stephens, Ark. 8	Howard-Glasscock (West Texas) 9	Grade B Gulf Coast and Refugio Texas 10
Below 25	....	....	.56	....	....	....	....	....	.55	.69
25 to 25.9	....	....	.52	....	....	....	....	....	.57	.71
26 to 26.9	....	....	.54	....	....	....	....	....	.59	.73
27 to 27.9	....	....	.56	....	....	....	....	....	.61	.75
28 to 28.9	....	....	.58	....	....	....	....	....	.63	.77
Below 29	.65	.56	....	....	.48	.43	....	.54	....	....
29 to 29.9	.69	.57	.60	....	.50	.45	.69	.58	.65	.79
30 to 30.9	.73	.59	.62	....	.52	.47	.73	.62	.67	.81
31 to 31.9	.77	.61	.64	....	.54	.49	.77	.66	.69	.83
32 to 32.9	.81	.63	.66	....	.56	.51	.81	.70	.71	.85
33 to 33.9	.85	.65	.68	....	.58	.53	.85	....	.73	.87
34 to 34.9	.89	.67	.70	....	.60	.55	.89	....	.75	.89
35 to 35.9	.92	.69	.72	....	.62	.57	.92	....	.77	.91
36 to 36.9	.95	.71	.74	....	.64	.59	.95	....	.79	.93
37 to 37.9	.98	.73	....	....	.66	.61	.98	....	....	.95
38 to 38.9	1.01	.75	....	....	.68	.63	....	....	....	.97
39 to 39.9	1.04	.77	....	....	.70	.65	....	....	....	.99
40 and above	1.07	.79	....	....	.72	.67	....	....	....	1.01

Column 1—Carter Oil Co. posted price schedule for Oklahoma and Kansas on October 28, 1930. Humble Oil & Refining Co. posted for North and Central Texas and East Central Texas on October 28 but made new price schedule on January 14, 1931 affecting North Texas or Wichita Falls district (see Column 2). All other companies adopted Column 1 schedule.

Column 2—Humble Oil & Refining Co. posted above prices on North Texas, Wichita, Wilbarger, Archer and North Young Counties, on January 14; The Texas Company on November 15; Stanolind Crude Oil Purchasing Co. on January 16; Gulf Refining Co. on January 14; H. F. Wilcox Oil & Gas Co. on January 14. Other companies applied the schedule to all North Texas counties in which they bought, including Clay, Montague and Foard.

Column 3—Posted by Humble Oil & Refining Co. on October 28.

Column 4—Companies quit posting April 16, but crude takes present Hutchinson-Carson prices.

Column 5—Humble Oil & Refining Co. posted above prices January 14, 1931; other purchasers adopted schedule.

Column 6—Humble Oil & Refining Co., October 28.

Column 7—Midwest Refining Co. on October 28. All crude over 37 degrees 98 cents.

Column 8—Louisiana Oil & Refining Co. and Atlantic Oil Producing Co., October 30.

Column 9—Humble Oil & Refining Co., October 28.

Column 10—Humble Oil & Refining Co. posted above prices on January 14, 1931, thus meeting the Gulf Pipe Line Co. and Gulf Refining Co. of Louisiana's price schedule posted on October 30, 1930.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co. (effective September 15, 1930). Union Oil Co. (effective September 15, 1930)

Gravity—	Long Beach, Seal Beach, Alamitos Hts. Huntington Beach, Inglewood, Torrance, Richfield, Olinda, Brea Canyon 1	Whittier, La Habra, Coyote Hills 2	Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills 3	Montebello 4	Santa Fe Springs 5	Santa Maria, Coalinga 6	Wheeler Ridge 7	Orcutt, Ventura, Rincon 8	Ventura Avenue 9	Elwood Terrace 10	Athens, Rosecrans, Dominguez 11
14 to 14.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
15 to 15.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
16 to 16.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
17 to 17.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
18 to 18.9	.76	.76	.62	.71	....	.62	.62	.65	.76	....	....
19 to 19.9	.82	.82	.70	.77	....	.70	.70	.70	.82	....	....
20 to 20.9	.88	.87	.78	.83	....	.78	.78	.78	.88	....	....
21 to 21.9	.94	.93	.86	.90	.92	.86	.86	.90	.91	....	....
22 to 22.9	1.00	.98	.94	.97	.95	.94	.94	.95	.94	....	....
23 to 23.9	1.07	1.04	1.02	1.05	1.01	1.02	1.02	1.02	1.00	....	....
24 to 24.9	1.12	1.08	1.06	1.08	1.05	1.04	1.04	1.08	1.05	....	1.12
25 to 25.9	1.17	1.12	1.10	1.11	1.09	1.06	1.06	1.11	1.10	....	1.17
26 to 26.9	1.22	1.16	1.14	1.15	1.13	1.08	1.08	1.15	1.15	....	1.22
27 to 27.9	1.26	1.21	1 18	1.19	1.18	1.11	1.10	....	1.19	....	1.27
28 to 28.9	1.30	1.25	1.23	1.23	1.23	1.15	....	....	1.23	....	1.32
29 to 29.9	1.34	1.29	1.29	1 26	1.28	1.19	....	....	1.27	....	1.37
30 to 30.9	1.38	1.33	1 35	1.29	1.33	1.23	....	....	1.31	....	1 42
31 to 31.9	1.43	....	1.40	....	1.38	1.27	....	....	1.35	....	1.47
32 to 32.9	1.48	....	1.47	....	1.43	1.31	....	....	1.41	....	1.52
33 to 33.9	....	....	1.53	....	1.48	1.35	....	....	1.47	....	1.57
34 to 34.9	....	....	1 59	....	1.53	1.39	....	....	1.53	1.32	1.62
35 to 35.9	....	....	1.65	....	1.58	1.43	....	....	1.59	1.39	1.66
36 to 36.9	....	....	....	....	1.63	....	....	....	....	1.46	1.72
37 to 37.9	....	....	....	....	1.68	....	....	....	....	1.53	1.78
38 to 38.9	....	....	....	....	1.73	....	....	....	....	1.60	1.84
39 to 39.9	....	....	....	....	1 78	....	....	....	....	1.66	1.90
40 to 40.9	....	....	....	....	....	....	....	....	....	1.72	1.96
41 to 41.9	....	....	....	....	....	....	....	....	....	1.78	2.02
42 to 42.9	....	....	....	....	....	....	....	....	....	1.84	2.08

Note—Standard Oil Co. of California, effective December 18, 1930, established the following posted prices for oil purchased in the Playa Del Rey Field: 20-20.9 degrees 74 cents; 21-21.9 degrees, 77 cents; 22-22.9 degrees, 81 cents; 23-23.9 degrees, 84 cents; 24-24.9 degrees, 87 cents; 25 degrees and above, 90 cents. Union Oil Co. adopted same price schedule on December 18. On January 20 the Union Oil Co. announced a gathering charge of 5 cents per barrel for receiving and delivering the oil into its pipe line.

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain, 11 to 13.9 gravity, 50 cents; 14 gravity and above 55 cents, effective March 11. On March 11 the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 50 cents. Fruitvale, posted by General Petroleum Co., 11-13.9, 50 cents; 14 gravity and above, 55 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 50 cents.

Column 5—Price change posted by Standard of California September 16.

Column 6—Oil below 14 gravity posted at 45 cents.

Column 8—Posted by General Petroleum Co.

Kettleman Hills—Union Oil Co., September 22, 35 to 35 gravity, $1.10; 40 to 44 gravity, $1.20; 45 to 49 gravity, $1.35; 50 to 54 gravity, $1.50; 55 gravity and above, 1.65. Standard Oil Co. of California, 55 gravity and above, $1.65.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Jan. 27

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago*	16.0	17.0	3.0	11.0
Decatur, Ill.	16.4	17.4	3.0	11.0
E. St. Louis	15.7	16.7	3.0	10.2
Joliet	16.4	17.4	3.0	11.0
Peoria	16.4	17.4	3.0	11.0
Quincy	16.2	17.2	3.0	10.8
Davenport, Ia.	16.5	17.5	3.0	11.3
Des Moines	16.5	17.5	3.0	11.3
Keokuk	16.5	17.5	3.0	11.3
Sioux City	16.1	17.1	3.0	10.9
Duluth, Minn.	17.5	18.5	3.0	11.9
Mankato	17.1	18.1	3.0	11.7
Minneapolis	17.2	18.2	3.0	11.9
La Crosse, Wis.	16.2	17.2	2.0	12.0
Milwaukee	15.1	16.1	2.0	10.9
Madison	15.3	16.2	2.0	11.1
Detroit, Mich.	16.8	17.8	3.0	12.7
Grand Rapids	16.7	17.7	3.0	12.6
Saginaw	16.9	17.9	3.0	12.8
Evansville, Ind.	17.1	18.1	4.0	11.9
Indianapolis	17.3	18.3	4.0	12.1
South Bend	17.4	18.4	4.0	12.2
Fargo, N. D.	18.9	19.9	3.0	13.9
Huron, S. D.	18.3	17.5	4.0	12.7
Sioux Falls	17.8	17.0	4.0	12.4
K. C., Mo.	15.9	16.9	3.0	9.6
Springfield†	15.9	16.9	3.0	10.5
St. Louis†	14.9	15.9	2.5	10.3
St. Joseph	15.5	16.5	2.0	10.1
Wichita, Kans.	14.8	13.8	3.0	9.8
Bartlesville, Ok.	15.5	18.5	4.0	9.5

*Effective June 3, discounts on Q.D.A. in Chicago district 4 cents off service station price on purchases of 500 gallons or more per month and 5 cents on purchases of 1,000 gallons or more per month.

†State tax 2 cents; remainder city tax.

Effective August 5, the following quantity discounts from the service station prices are allowed on monthly sales of gasoline: 500 gallons or more, 3 cents; 75,000 gallons or more, 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discounts on the previous month's purchases.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Wh'ls'e price	Retail price	Incl'ds tax of	tank wagon
Fresno	21.0	21.0	3.0	17.0
San Francisco	21.0	21.0	3.0	15.5
Los Angeles	20.5	20.5	3.0	15.5
Reno, Nev.	26.0	20.0	4.0	19.0
Portland, Ore.	22.5	22.5	4.0	16.5
Seattle, Wash.	21.5	21.5	3.0	16.5
Tacoma	21.5	21.5	3.0	16.5
Spokane	25.5	22.0	3.0	20.5
Phoenix, Ariz.	19.5	21.5	4.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 5 cents.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N.J.	14.5	16.5	3.0	11.5
Newark	13.5	15.5	3.0	10.5
Annapolis, Md.	16.0	17.0	4.0	11.0
Baltimore	15.2	16.2	4.0	9.5
Cumberland	17.0	18.0	4.0	12.0
Wash'gton, D.C.	13.7	14.7	3.0	10.7
Danville, Pa.	17.8	18.8	5.0	11.8
Norfolk, Va.	16.3	17.3	5.0	10.0
Petersburg	17.3	18.3	5.0	11.3
Roanoke	18.0	18.0	5.0	12.0
Richmond	16.7	17.7	5.0	10.7
Charles'n, W.Va.	16.5	17.5	4.0	11.5
Keyser	17.1	18.1	4.0	12.0
Parkersburg	15.2	16.2	4.0	10.2
Wheeling	16.4	17.4	4.0	11.4
Charlotte, N. C.	18.3	19.3	5.0	12.3
Hickory	18.6	19.6	5.0	12.6
Mt. Airy	18.5	19.5	5.0	12.5
Salisbury	18.5	19.5	5.0	12.5
Charleston, S. C.	17.3	18.3	6.0	10.3
Columbia	19.2	20.3	6.0	12.3

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	17.25	18.25	4.0	11.25
McCook	18.75	20.75	4.0	12.75
Norfolk	17.25	17.25	4.0	11.75
N. Platte	18.75	20.75	4.0	12.50
Scottsbluff	18.75	20.75	4.0	12.25

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	16.5	18.5	6.0	12.0
Baton Rouge	17.5	19.5	5.0	13.0
Alexandria†	18.5	20.5	6.0	13.0
Lafayette*	18.5	20.5	6.0	13.0
Lake Charles*..	18.5	20.5	6.0	13.0
Shreveport	17.5	19.5	5.0	13.0
Knoxville, Tenn.	19.0	21.0	5.0	15.0
Memphis	17.0	19.0	5.0	12.5
Chattanooga	18.5	20.5	5.0	13.0
Nashville	18.0	20.0	5.0	15.0
Bristol	20.0	22.0	5.0	14.0
Lt. Rock, Ark.	16.0	18.0	5.0	12.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in Parish of Rapides.

One-cent discount allowed off station price on all cash purchases. All other station discounts withdrawn October 2, 1930.

Two-cent discount off gasoline tank wagon price to dealers and commercial accounts.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	16.0	17.0	4.0	†13.0

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	14.0	19.0	...	12.0
Philadelphia	14.0	19.0	...	12.0
Scranton	14.0	19.0	...	12.0
Allentown	14.0	19.0	...	12.0
Altoona	14.0	19.0	...	12.0
Erie	14.0	18.0	...	11.0
Dover, Del.	17.0	19.0	3.0	12.0
Wilmington	17.0	19.0	3.0	12.0
Springf'd, Mass.	17.5	19.5	2.0	10.0
Worcester	17.3	19.3	2.0	10.0
Boston	14.5	16.5	2.0	10.0
Providence, R.I.	12.7	14.7	2.0	10.0
Hartford, Conn.	17.5	19.5	2.0	10.0
New Haven	17.6	19.6	2.0	10.0

*Includes tax of 3 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	19.0	21.0	6.0	13.5
Augusta	20.0	22.0	6.0	15.5
Macon	20.0	22.0	6.0	13.0
Savannah	19.0	19.0	6.0	14.0
Birm'ham, Ala.	19.0	21.0	5.0	15.0
Mobile	19.0	21.0	4.0	15.0
Montgomery	19.0	21.0	4.0	15.5
Clarks'le, Miss.	18.0	18.0	5.0	11.0
Jackson	15.0	17.0	5.0	13.0
Natchez	18.0	20.0	5.0	13.0
Gulfport	18.0	20.0	5.0	13.0
Vicksburg	18.0	20.0	5.0	13.0
Jack'ville, Fla.	17.0	19.0	6.0	14.0
Miami	19.0	21.0	6.0	14.0
Pensacola	19.0	21.0	6.0	18.5
Tampa	18.0	20.0	5.0	13.0
Lexington, Ky.	17.0	18.0	5.0	14.5
Covington	17.0	18.0	5.0	13.5
Louisville	16.0	18.0	5.0	11.0
Ashland	17.0	19.0	5.0	13.0
Paducah	17.0	19.0	5.0	12.0
Bowling Green	19.0	21.0	5.0	14.5
Corbin	19.0	21.0	5.0	16.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	15.5	15.5	2.0	13.5
Augusta, Me.	18.8	18.8	4.0	14.8
Manch'tr, N. H.	18.4	18.4	4.0	14.0
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	14.0	17.0	4.0	11.0
Fort Worth	14.0	17.0	4.0	10.0
Houston	15.0	19.0	4.0	11.0
San Antonio	13.0	17.0	4.0	10.0
El Paso	16.0	20.0	4.0	12.0
Texarkana	17.0	17.0	4.0	11.0
Muskogee, Ok.	15.0	18.0	4.0	9.0
Okla. City	13.0	16.0	4.0	10.0
Tulsa	13.0	17.0	4.0	10.0
Ft. Smith, Ark.	17.5	18.5	5.0	12.0
Little Rock	16.0	17.0	5.0	12.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	12.0	15.0	4.0	13.5
Pueblo	14.0	17.0	4.0	13.5
Grand Junction	18.0	19.0	4.0	17.0
Casper, Wyo.	17.0	20.0	4.0	12.0
Cheyenne	18.0	21.0	4.0	13.5
Butte, Mont.	19.0	22.0	5.0	18.0
Billings	20.0	23.0	5.0	16.5
Great Falls	20.0	23.0	5.0	18.0
Helena	20.0	23.0	5.0	18.0
Salt Lake, Utah	19.0	22.0	3.5	17.0
Albu'que, N. M.	16.0	20.0	5.0	14.0
Boise, Idaho*	22.5	....	5.0	19.0
Twin Falls†	22.5	....	5.0	19.0

*Two and one-half cents off tank wagon to dealers at time of delivery. †Three cents off tank wagon to dealers at time of delivery.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
350 gallons or more	7.5

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12.0	8.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

TANK WAGON PRICE CHANGES

Standard Oil Co. of Indiana advanced the gasoline tank wagon and station prices to 16.4 and 17.4 cents in Decatur, Ill., December 23. On December 16 the gasoline tank wagon and station prices were reduced to 15.5 and 16.5 cents in St. Joseph, Mo. On December 24 the gasoline tank wagon and station prices were advanced to 17.1 and 18.1 cents in Mankato, Minn. On January 3 the gasoline station price was increased to 17.5 cents in Davenport, Iowa, and to 18.5 cents in Duluth, Minn. On the same date the gasoline tank wagon and station prices were advanced to 16.7 and 17.7 cents in Grand Rapids, Mich., and to 16.9 and 17.9 cents in Saginaw, Mich. On January 17, the gasoline station price was reduced to 17.5 cents in Huron, S. Dak., and 17 cents in Sioux Falls, S. Dak.

Standard Oil Co. of New Jersey advanced the gasoline tank wagon and station prices 1 cent in New Jersey, December 1, to equalize the increase in the state tax from 2 cents to 3 cents.

Standard Oil Co. of California reduced the gasoline retail price to 22 cents in Reno, Nev., January 19, and on January 20 reduced it to 20 cents.

Standard Oil Co. of Kentucky posted 19 cents as the gasoline tank wagon and station price in Savannah, Ga., on January 19. On January 21 the gasoline tank wagon and station prices were posted at 19 cents and 21 cents respectively in Birmingham, Mobile and Montgomery, Ala.

CRUDE OIL PRICE CHANGES

The Texas Company posted a lower price for Markham crude (Gulf Coast Field), effective January 15. The new price is 69 cents per barrel.

STANDARD BRINGS SUIT

CHICAGO, Ill., Jan. 26.—Attorneys for the Standard Oil Co. of Indiana today filed suit in the federal district court at Denver, Colo., to enjoin the so-called Standard Oil Co. of Colorado and Standard Oil & Gas Co. of that State from using their present names or any other names which would convey the impression that they are in any manner related to the Standard Oil Co.

CRUDE OIL PRICES

(Continued from Page 193)

panies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Ohio Oil Co. and Continental Oil Co. Latter company posted 50 cents per barrel January 1, 1931. Border and Red Coulee posted by Imperial Refining Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Oct. 28, 1930)*	$0.90
Luling (Oct. 28, 1930)†	.75
Mirando (Jan. 14)*	.63
Pettus (Oct. 28, 1930)*	1.10
Salt Flat (Oct. 28, 1930)*	.90
Thrall‡	...
Lytton Springs (Lockhart) See gravity table	
Dobrowolski (Oct. 25, 1930)‖	...
Same as Mid-Continent gravity scale up to and including 38-38.9° at	1.01
Somerset (Oct. 25, 1929)¶	...
Same as Mid-Continent gravity scale up to and including 38-38.9° at	1.01

*Posted by Humble Oil & Refining Co. and Magnolia Petroleum Co. †Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co. ‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective Nov. 12, 1930)

Penna Grade Oil in National Transit Lines (Pennsylvania)	$1.85
Penna Grade Oil in Southwest Pennsylvania Lines (Pennsylvania)	1.80
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.70
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) (Sept. 14, 1930)	1.45
Corning Grade Oil in Buckeye Pipe Line Co.'s Lines (Dec. 31, 1930)	1.15
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky)	1.10
Wayne District Oil in Cumberland Pipe Lines	1.17
Tide Water Pipe Co.	
Bradford district (Nov. 12, 1930)	$2.15
Allegany district (Nov. 12, 1930)	2.15
Pure Oil Co.	
Cabin Creek, W. Va. (Nov. 12, 1930)	$1.70
Kelly Creek, W. Va. (Nov. 12, 1930)	1.70
Bradford Hollow, W. Va. (Nov. 12, 1930)	1.70

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective Oct. 28, 1930)

Lima	$1.10
Wooster	1.40
Illinois	1.30
Indiana	.87
Princeton	1.30
Plymouth	.89
Western Kentucky	1.15
Midland, Mich.*	1.10
Dundee, Mich. (Oct. 26)†	...
Same as Mid-Continent gravity scale	
Upper and Lower Traverse Sands, Mich. (Oct. 28, 1930)†	...
Same as Mid-Continent gravity scale	
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (Oct. 28)‡	.85
Oil City, Ky.§ (Jan. 14)	.80
Oil Springs (Canada) (Oct. 28)¶	1.57
Petrolia (Canada (Oct. 28)‖	1.50

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Paragon Development Co. §Posted by Stoil Refining Co. ¶Posted by Imperial Oil, Ltd.

MEXICAN CRUDE

Panuco*	$0.84

*F.o.b. ship, based on December transactions and exclusive of taxes and bar dues.

CONCRETE OIL STORAGE MUST BE IMPERVIOUS

(Continued from Page 37)

ficient to produce a paste plastic enough to be handled. Any water in excess of this amount serves but to dilute the mixture and reduce its potential strength, liquid tightness, and therefore durability.

Dependent Upon Two Factors

From this it is evident that the properties of the hardened paste are largely dependent upon two factors: (1) The relative proportions of cement and water; (2) the extent to which the chemical combination between the cement and water is allowed to proceed.

The problem of proportioning concrete for a given degree of durability, consists of two steps: (1) The selection of that proportion of water and those conditions of curing which will give a paste to meet the requirements for the particular structure as to strength, liquid tightness or weather resistance; (2) to determine the combination of aggregates that will give a mixture that is plastic and workable, and that will remain homogeneous during placing and through the setting and hardening period.

Workability is important. Unworkable mixtures when too dry cause honeycombing in the structure. When too wet they cause segregation of the ingredients. A mix is plastic and workable when it can be molded readily, but will change its form slowly when the mold is removed; that is, it flows sluggishly but without segregation of the water or fine materials from the coarse. With a workable mix it is possible to produce a homogeneous mass so that every portion will be exactly like every other portion; only with a workable mix can the rules of strength and liquid tightness of the cement paste be applied to the concrete as a whole. It is vital that plastic and homogeneous mixtures be produced and placed.

The remaining element which fixes the character of concrete, as reflected in the quality of the paste, is the extent to which the chemical reactions are allowed to progress. The continuation of these reactions in portland cement requires favorable curing conditions; that is, moderate temperatures and the presence of moisture. It is through curing that the internal structure of the concrete is built up to provide strength and liquid tightness. These qualities are not attained as soon as the cement has set. In fact, it continues to harden and become more liquid tight for an indefinite time, but the process is particularly rapid during the first 10 days or two weeks. During this period the presence of water is required.

Quick Drying Dangerous

It can be understood readily that if the concrete is allowed to dry out too soon, the chemical combination between the cement and water will cease further development. The strength or degree of water tightness developed will be determined largely by the length of time favorable curing conditions are present. The concrete should be kept moist for a period of at least 10 days or two weeks. Longer curing is beneficial, while insufficient curing may defeat every other care exercised in making concrete.

Without sound aggregates, durable and sound concrete cannot be made. Aggregates which will rapidly disintegrate under the influence of weathering agencies will not endure indefinitely in a concrete structure, even with the protection afforded by the cement paste by which they are surrounded.

Most of our common rocks and gravels are highly resistant to the ordinary processes of weathering and exposure. New and untried aggregates should be subjected to tests for soundness and durability before being used.

Grading and the size and shape of aggregate particles are commonly recognized as properties affecting permeability of concrete. A clear understanding of the true significance of these factors is important to an economical design of concrete for durability.

The real importance of these factors lies in the fact that with the old method of specifying a certain fixed mix such as 1-2-4, aggregates of different properties required different amounts of water to produce the desired consistency. Thus different sizes or gradings gave widely different strengths and degrees of water tightness through the differences in the water-cement ratios resulting. As long as fixed mixes are made the basis of specifications, these will remain as factors of greatest importance, and since they are seldom properly controlled will cause wide variation in the strength and life of structures. However, under the practice of making the water-cement ratio a basis of the design of mixtures or the specification, these factors become of importance principally through their effect on economy, for with a given water-cement paste the proportions and amount of aggregate to produce concrete having the workability suitable for the job will depend on these characteristics of the aggregates.

Operation Not Difficult

The design and control of mixtures for concrete structures to hold crude oil, is not a difficult operation. First, there must be an adequate specification that will insure the proper employment of the material.

The amount of mixing water to be used with each sack of cement should be specified to be not more than 5½ gallons, which amount should include the moisture in the aggregates. That portion of the specification which, under old conditions, would deal with mixture proportions such as 1-2-4, or 1-1½-3¾ should be stated in terms that fix the maximum amount of mixing water, in this case 5½ gallons per sack of cement. Definite proportions such as 1-2-4 should never be used. Only limiting proportion of fine and coarse aggregate should be stated in reference to the actual proportioning. The actual proportioning is left to the contractor to determine for himself on the job, under the other conditions of the specifications.

Under these conditions the contractor will naturally work toward the most economical mix, that is, in the direction of increased amount of either fine or coarse aggregate depending upon the relative costs of the ingredients. He will of course be concerned also with having a workability such that no extra cost be entailed in the placing. Too much aggregate in the mix, or a great excess of either fine or coarse will tend to destroy workability. As a safeguard against such a contingency, some limitations to the proportion of aggregates in the mix can be established in the specification.

On the job, it is necessary to determine a suitable mix with the fixed proportions of cement and water specified. This presents no difficulty and can be done by actual trial, making adjustments in the proportions until concrete of the character specified is obtained.

Preliminary Trial Batches

Preliminary trial batches may be made for estimating purposes. When concreting operations are started, full sized trial batches may be made in the mixer, using aggregate selected for the job. Cement and water in the specified ratio and reduced amounts of aggregate are first placed in the mixer. Additional sand and stone are then added in carefully measured quantities until the batch has reached the desired consistency.

As an aid to contractors who are not sufficiently familiar with local material to estimate proportions for the first trial batch, Table 1 may be used. The mixes given in this table are based on dry compact volumes and proper allowance must be made for loose measurement and the effect of bulking due to moisture. Valves should not be taken from this table for estimating purposes, nor should the mixes be taken as the final suitable proportions. As will be shown by trial, the actual proportions required to give the desired workability will vary somewhat from the proportions listed. This variation will be different for each different combination of materials.

TABLE 1
Trial Mixtures for Various Water-Cement Ratios

Water-cement ratios indicated include moisture contained in the aggregate.

Proportions are given by volume aggregate dry and compact. Thus 1-2-3½ indicates 1 volume of cement, 2 volumes of sand and 3½ volumes of coarse aggregate.

If the aggregates are to be measured in the damp and loose condition they will occupy greater volume than when dry and compact. Amount should be determined by test. Approximate average value for sand 20 per cent, for coarse aggregate 6 per cent.

The mixtures are given as a guide only. The first batch should be made with measured water content and the proportions thereafter adjusted to give the desired workability maintaining the specified water-cement ratio.

Water-Cement Ratio 5½ Gallons per Sack (3,500 Pounds per Square Inch.)

Slump inches	Trial mix, dry compact—volumes for maximum size of aggregate indicated: 1 inch	2 inches
½-1	1-2-3	1-2-3½
3-4	1-1¾-2½	1-1¾-3
5-7	1-1½-2	1-1½-2½

The procedure on the job in determining the mix with the use of the table will be as follows:

Given conditions:

Water-cement ratio ..... 5½ gals. per sack
Slump ..... 3 to 4 inches
Maximum size coarse aggregate ..... 2 inches

From Table 1 with the above limiting conditions it is found that the trial mix should be 1-1¾-3.

Corrections to be made bulking (from test)	Sand 20 per cent Stone 6 per cent	
Trial mix	1	1¾ 3
Bulking factor	..	1.20 1.06
Corresponding mix corrected for bulking	1	2.1 3.2

Water content (from test of aggregate, loosely measured and each in excess of absorption):

Sand ⅛-gal. per cu. ft.
Stone ¼ gal. per cu. ft.

Amount of water in aggregate of corrected mix:

Sand 2.1 x .5 = 1.1 gallons
Stone 3.2 x .25 = 0.8 gallons
Total ..... 1.9 gallons

Gallons of water per sack of cement to be added at the mixer, 5½-1.9 = 3.6 = 3⅝ gallons.

Finding Correct Proportions

With these corrected proportions the trial batch may be run. If the first batch is slightly harsh and will not slump the prescribed amount, the proportions of fine and coarse aggregates may be reduced slightly and another trial made. If the batch is too wet the aggregate proportions may be increased a slight amount. After two or three trials the exact proportions required for the desired workability will be determined.

If the sections of the work vary in size, the consistency may be varied within the limits of workability by making similar adjustments in aggregate proportions during the course of the work. So long as the water-cement ratio is unchanged and the concrete produced is in a workable condition suitable to the job, the quality remains constant. This allows economies to be realized in proportioning that are not possible in the case of a fixed mix where the conditions of consistency are met by changes in the amount of mixing water.

If a degree of durability, as reflected in the conditions of exposure and service of an oil storage structure, is to be obtained, the basic principles affecting the making of concrete must be observed.

In handling and placing the concrete every precaution should be taken to prevent the materials from segregating, so that the finished structure will be uniform throughout. The workability of the concrete must be adjusted to the methods of handling and placing so that segregation does not take place. One of the most serious types of segregation is due to the use of too wet a mixture with consequent accumulation of water at the surface as the placing progresses, causing layers of laitance and porous concrete. With these fluid mixes, the water-cement ratio of the mass will vary from bottom to top with differences in strength and watertightness in the various layers. This may be avoided by controlling the plasticity through the grading and proportions of the aggregates.

Eliminating Excess Water

In placing deep layers of concrete, especially in narrow walls containing considerable reinforcement where a fairly wet consistency is required, there is a tendency for water to accumulate at the top of the concrete. This excess water can be taken up by stiffening the consistency as the top of the lift is approached. This generally is no hardship as the top of the lift is usually accessible for puddling. When the top of the wall or section is reached, it is good practice to overfill the form, allowing the concrete to stand until the excess water has risen to the surface and drained off. The surface can then be screeded to the proper level, thus avoiding a laitance layer or porous concrete at the top surface.

With all other things being as they should in the light of present-day knowledge of concrete, one further requirement remains. There must be a recognition on the part of those in authority that uniform concrete to meet the specific requirements of strength and durability will require intelligent effort and faithfulness to details: suitable materials; proper design; thorough mixing and care in transporting, placing and curing.

To obtain the desired results some qualified person must be made responsible for these details, and having been made responsible, must be intrusted with necessary authority to enforce them.

Summary

Planning and constructing concrete structures for the storage of oil involve the following important considerations:

Structures should be designed only by experienced engineers.

Work should be done under a modern specification to insure the economical production of concrete.

A competent contractor equipped to meet the requirements of the specifications should be employed.

Engineering supervision by some person qualified to assume responsibility for various details should be provided on all important work.

With close adherence to the principles just set forth concrete structures will satisfactorily meet all the requirements for the safe storage of crude oil. The concrete will be of such quality that there will be no detrimental effect from chemicals in the oil. The structure will be economical and free from unreasonable maintenance costs.

BUYS REID COMPANY

NEW YORK, Jan. 26.—P. R. Johnson, well known export petroleum operator and vice president and general manager of David C. Reid, Inc., has secured a controlling interest in the company, which will henceforth be known as David C. Reid Co.

Mr. Johnson has been engaged in the marine and petroleum business here for the past 20 years, and has been in charge of the petroleum department of David C. Reid, Inc., since 1918. The company has affiliations throughout all the principal European countries, and is one of the best known firms in this line of business in the United States.

W. G. Post, who has been manager of the oil sales department for several years past, P. R. Jensen, and the remainder of the personnel of the former firm of David C. Reid, Inc., continue with the David C. Reid Co.

BUYS NEW ENGLAND PROPERTIES

NEW YORK, Jan. 26.—The City Service Refining Co., with headquarters at Boston, has purchased the New England division of Crew-Levick Co. Both companies are affiliated with the Doherty interests.

The newly acquired property consists of a modern warehouse, with storage capacity for 2,000 drums of lub oil, a railroad siding at Boston, and storage plants at Providence, R. I., Springfield and Worcester, Mass., and other points in the territory.

The business of the New England division has been confined to the marketing of lubricating oils and greases.

Prairie-Richfield of New York Rumors

Coincident With Reports of Offer by Cities Service for Purchase of Richfield Oil Co. of California

NEW YORK, Jan. 27.—Coincident with the offer by Cities Service Co. for an exchange of its stock for that of Richfield Oil Co. of California it was learned here that negotiations have been under way between Prairie Oil & Gas Co. and Richfield for the acquisition of Richfield Oil Corp. of New York by Prairie. Richfield of New York is a wholly owned subsidiary of the California Co. but it is considered likely that the eastern company will be disposed of as a separate unit. Prairie's plans, it is understood, involve the acquisition of extensive marketing outlets, with no refinery construction contemplated at this time. Prairie's method of operation under this plan would be the sale of crude to independent refiners and the purchase of refined products from these refiners for the supplying of its marketing department. Officials of the Richfield organization are reported in Philadelphia today to meet with Crew Levick officers to discuss details of the Cities Service offer for buying into the Richfield organization in a substantial way.

I. T. I. O.

Report of Indian Territory Illuminating Oil Co. and subsidiaries for year ended October 31, 1930, shows net profit of $11,693,085 after taxes, interest, depreciation, depletion, etc., equivalent to $1.39 a share on combined 1,304,600 no-par shares of Class A and 7,090,037 no-par shares of Class B stocks. This compares with $3,033,280, or 39 cents a share (par $1), on 7,752,842 shares of capital stock in preceding year.

The balance sheet of Indian Territory Illuminating Oil Co. carried inventories of crude oil and gasoline stocks at the market of $8,155,852, compared with $14,462,882 on October 31, 1929. The 1930 balance sheet also shows crude oil price reserve of $2,222,691 and also a deferred charge of $1,635,519 for oil in storage expense. Total reserves for depletion and depreciation, and other reserves, amount to $17,752,465, against $16,107,336 in the 1929 report.

H. V. Foster, president of Indian Territory Illuminating Oil Co., states that in the last fiscal year the company was obliged to spend large sums of money in a defensive drilling campaign, particularly in Oklahoma City Pool. "In consequence," he states, "we have a very large prepaid investment in wells, the production of which has no adequate market outlet. The company had as of October 31 a daily potential production in Oklahoma City Pool and in other areas of over 1,250,000 bbls.

"These wells are completed and are ready to produce, so we can, as markets become available, secure the oil from these large proven and actually developed reserves at a relatively small expenditure for lifting and producing costs. We have also built gasoline plants, a skimming plant and have made substantial investments in additional acreage reserves and generally have continued a normal expansion and routine program during the fiscal year."

General conditions in the industry, coupled with large reinvestments made during the year, Mr. Foster says, led to the decision that such resources should be conserved and that no dividend should be paid.

Minority stock of Westerly Oil Co., was purchased during the year and all assets transferred to the parent company. By an exchange of stock Indian Territory also purchased certain valuable properties of Foster Petroleum Co.

The increased investment is shown in the growth of plant and investment account of $113,228,814, from $48,014,473 at the close of October, 1929. New funds were raised when stockholders of record April 15, 1930, were offered the right to subscribe at $17 a share to new Class A stock in the ratio of one share for each four shares of Class B stock or old stock held.

The balance sheet shows notes payable of $46,650,000 to Empire Gas & Fuel Co., subsidiary of Cities Service Co., due November 30, this year. Empire in turn controls Indian Territory Illuminating Oil.

Prairie Pipe Line

The annual meeting of stockholders of the Prairie Pipe Line Co. will be held at Independence, Kans., on March 3, 1931, at 2 o'clock p.m. for the election of directors and the transaction of general business. Stockholders of record at least 30 days prior to March 3 shall be entitled to one vote for each whole share. Fractional shares shall not have voting power.

W. F. Gates, president and general manager, in a letter to stockholders says:

"The Prairie Pipe Line Co., a Kansas corporation, was organized January 14, 1915. Its original capital was $27,000,000, the stock being of the par value of $100 per share. Since its organization the company has increased its capital to $101,250,000 and changed the par value of its stock from $100 to $25 per share. The earnings of the company have always been satisfactory.

"During the past year, due to readjustment in the business of several of the large crude oil purchasing companies and changes in their transportation outlets, the shipping business of the Prairie Pipe Line Co. has been reduced. This of course necessitates that the company acquire other customers which it is now doing and eventually it is expected that the normal capacity of its pipe lines will be made use of by other shippers.

"The great overproduction of crude oil, the shipping of oil by refinery-owned pipe lines or of distress oil by means of tank cars, the piping of the refined products from the field to the place of distribution and consumption are all factors that have tended to depress the oil business generally, as well as to reduce the amount of oil usually available to the company for transportation.

"The officials of the company are substantial stockholders personally and vitally interested in its success and continued prosperity. They have kept in constant touch with the situation, are fully aware of the general conditions and stockholders may be assured that they will meet the situation in an aggressive and conservative way and take such action as will not only meet with the approval of the stockholders but will insure to the company the continuation of satisfactory business. The present period of depression is apparently drawing to a close and the company will enter upon the upgrade with sufficient assets and reserves to enable it to take advantage of the more favorable opportunities offered to increase its business and protect the investment of its stockholders."

Cities Service

Cities Service net earnings for the year 1930 were $58,307,813, a new record and an increase of more than 34 per cent over 1929, heretofore the banner year. The earnings of $1.39 per share compare with $1.18 for the 12 months ended December 31, 1929.

Over $150,000,000 was spent for construction and acquisitions during the year. A large part of this expenditure went into expansion of the organization's oil producing, refining and marketing and natural gas properties. The retail oil marketing division of the company enjoyed in 1930 the largest expansion in its history. Hundreds of new stations were constructed or purchased and many new dealer organizations are now handling Cities Service products.

During 1930 owners of Cities Service common stock increased 87,500 to a total of 438,000. The number of holders of all Cities Service securities is over 750,000.

Coincident with the publication of its earnings statement, Cities Service Co. announced monthly dividends of 2½ cents per share in cash and one-half of 1 per cent on the common stock. Regular monthly dividends of 50 cents per share on the preferred and preference BB stock and 5 cents per share on the preference B stock were announced, all payable March 2 to stockholders of record February 14.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

June 11	46.65	Oct. 1	37.16
June 18	41.41	Oct. 8	35.85
June 25	42.37	Oct. 15	35.21
July 2	44.13	Oct. 22	34.88
July 9	44.11	Oct. 29	32.84
July 16	46.42	Nov. 5	31.77
July 23	46.06	Nov. 12	30.10
July 30	44.89	Nov. 19	31.54
Aug. 6	45.24	Nov. 26	30.86
Aug. 13	43.53	Dec. 3	30.53
Aug. 20	43.79	Dec. 10	28.57
Aug. 27	42.83	Dec. 17	25.42
Sept. 3	42.71	Dec. 24	25.40
Sept. 10	42.81	Dec. 31	26.15
Sept. 17	42.43	Jan. 7	27.56
Sept. 24	40.62	Jan. 14	27.31

Houston Oil

Houston Oil Co. of Texas declared an initial semiannual dividend of 75 cents on the new $25 par preferred stock, payable February 2 to stock of record January 16. Last year the $100 par 6 per cent preferred stock was split up on the basis of four shares of new $25 par stock for each share of $100 par.

Indian Refining

The Texas Company has started the exchange of its capital stock for the shares of Indian Refining Co. on the basis one share of Texas for each eight shares of Indian Refining. The time for deposit of Indian Refining stock has been extended to February 14. Ehe exchange may be made at the offices of The Texas Company or at the Indian Refining Co.

(Continued on Page 201)

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1931 High	1931 Low	Week ending January 21 Sales	High	Low	Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	¼	200	½	½	½	Atlantic Lobos		499,448	N.P.	....	5-28-30	..	..	..	..	1	¼
65	11¼	100	12⅞	12⅞	12⅞	Borne Scrymser		$1,000,000	$25	$18A	10-15-30	56½	44½	46½	25	25	11¾
69	38	100	40	40	40	Buckeye Pipe Line		$10,000,000	$50	$1Q	12-15-30	76	53	74½	55	69	39⅛
184⅞	100¼	100	110¼	110¼	110¼	Chesebrough Mfg.		$3,000,000	$25	$1Q	12-30-30	161	117	210	130	184⅞	104¼
65¾	20¼	50	25	25	25	Cumberland Pipe Line		$1,500,000	$50	$1Q	12-15-30	114	67	75¾	40	65¾	20¼
54¾	26	200	28	28	28	Eureka Pipe Line		$5,000,000	$100	$1Q	11- 1-30	88	64⅛	70½	42	54¾	26
7	2⅛	100	2⅛	2⅛	2⅛	Galena Signal Oil		$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
119	57¼	300	61	60½	61	Humble Oil & Refining		$74,103,300	$25	50eQ‡	1- 2-31	114¾	59½	128	74⅛	119	57¼
320	303	100	315	315	315	Illinois Pipe Line		$20,000,000	$100	$4.50	12-15-30	290½	176½	340½	260	320	303
30	15	300	17½	17½	17½	Imperial Oil of Canada	(sh)	26,421,768	N.P.	12½eQ	12- 1-30	104	56¾	41	22	30	15
41	14½	300	18	18	18	Indiana Pipe Line		$3,000,000	$10	50eQ‡	11-15-30	91⅞	74⅜	41⅞	26	41	14½
24	11⅜	2,300	15	14¾	14⅞	International Petroleum	(sh)	14,247,088	N.P.	25eQ	12-15-30	55	35	30⅜	15	24	11⅜
22⅜	11½	100	13¾	13¾	13¾	National Transit		$6,362,500	$12.50	25eQ	12-15-30	32⅜	19⅜	25⅛	10⅛	22⅜	11½
21⅜	10¼	100	13	13	13	New York Transit		$1,000,000	$10	40eQ	1-15-31	75	38½	17½	10	21¾	10¼
54	26¼	100	26¼	26¼	26¼	Northern Pipe Line		$2,000,000	$50	$2SA	1- 2-31	69	56½	63	41	54	26¼
32	12	100	13½	13½	13½	Penn Mex Fuel		$10,000,000	$25	$1	12-15-30	84	28	44½	20	32	12
33	4⅞	100	6	6	6	Solar Refining		$4,000,000	$25	....	12-20-29	..	..	50	29	33	4⅞
20⅞	8¾	200	11½	11½	11½	Southern Pipe Line		$1,000,000	$10	5eQ	12- 1-30	19	15	22½	13	20⅞	8¾
45⅞	16⅛	200	23	22⅞	23	South Penn Oil		$30,000,000	$25	50eQ	12-31-30	71⅞	36¾	60¼	35⅛	45⅞	16⅛
64	32	100	33	33	33	Southwest Pennsylvania Pipe Lines		$1,750,000	$50	$1Q	1-10-29	102	70	70	60	64	32
59⅞	30	1,500	36⅞	36½	36⅞	Standard Oil of Indiana		$348,175,069	$25	62½eQ‡	12-15-30	95⅞	70⅞	63	45	59⅞	30
40½	18⅞	500	22¾	22⅛	22⅛	Standard Oil of Kentucky		$25,654,516	$10	40eQ	12-31-30	179¾	122¼	46⅞	29	40½	18⅝
48⅞	34⅝	200	36	36	36	Standard Oil of Nebraska		$4,649,225	$25	62½eQ‡	12-31-30	54⅞	39⅞	50¼	40	48⅞	34⅝
108½	43¼	400	51⅛	51	51⅛	Standard Oil of Ohio		$14,000,000	$25	62½eQ	1- 2-31	134	71	129	60	108½	43¼
10	3½	600	3½	3½	3½	Swan-Finch Co.		$861,466	$25	43¾eQ	12- 1-30	23½	16	18	10	10	4
97⅞	45⅜	1,700	57⅜	55⅞	55⅞	Vacuum Oil Co.		$126,180,350	$25	$1Q	12-20-30	111	72	133¾	75	97⅞	45⅜

*Plus 50 cents extra. †Plus 10 cents extra. ‡Plus 25 cents extra. x Ex-dividend.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1931 High	1931 Low	Week ending January 21 Sales	High	Low	Close	Stocks		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
4½	½	100	¾	¾	¾	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
21	13⅜	500	15¾	15¾	15¾	British American (coupons)		1,311,321	N.P.	20cQ	1- 2-31	55	32¾	62	7⅞	23	13⅜
2¾	⅝	700	⅝	⅝	⅝	Carib Syndicate		$1,311,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
44¼	13⅛	14,200	17⅜	16⅝	17	Cities Service	(sh)	24,290,359	N.P.	30cA†	1- 1-31	90⅞	54	68⅛	20	44¼	13⅛
93⅞	78¼	300	81⅝	81⅝	81⅝	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	1- 1-31	103¼	94½	98¾	84	93⅞	78¼
¾	⅛	900	⅛	⅛	⅛	Colombia Syndicate		$2,000,000	$1	....	.....	3¼	.76	2	½	¾	⅛
5⅞	2	700	2⅝	2½	2⅝	Consolidated Royal		$5,000,000	$10	12½cQ	10-25-30	8⅞	6¼	11⅛	2½	5⅞	2
7⅝	3	300	3⅜	3⅜	3⅜	Creole Petroleum	(sh)	5,977,873	N.P.	....	.....	17½	9½	11⅜	5⅝	7⅝	3
21¾	4⅛	200	4⅛	4⅛	4⅛	Darby Petroleum		1,019,392	N.P.	25cQ	10-15-30	33½	3¼	26	6½	21¾	4¼
11	2	300	2⅞	2⅞	2⅞	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
60	30	75	32½	30	30	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21⅛	7½	44	20¾	60	30
166⅞	58½	300	69½	68½	68½	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	1- 1-31	165	101¼	209	115	166⅞	58½
1¾	⅜	300	½	½	½	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅜	1¾	⅜
3	⅞	100	1	1	1	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
4⅜	½	1,100	⅜	⅜	⅜	Leonard Oil & Development		$50,000,000	$25	....	.....	9⅜	5⅛	6⅛	1	4⅜	½
29	4⅞	400	6⅜	6¼	6⅜	Lion Oil & Refining	(sh)	250,000	N.P.	50cQ	10-27-30	43⅞	20	38⅞	18	29	4⅞
55⅞	19⅝	600	26	26	26	Lone Star Gas	(sh)	5,000,000	N.P.	25cQ	12-31-30	69⅛	48½	67⅞	28	55⅞	19⅝
½	⅛	100	⅛	⅛	⅛	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	¼	½	⅛
16	3	200	4½	4	4	Margay Oil Corp.		160,000	N.P.	25cQ	7-10-30	48½	32	38½	14	16	3
7½	1¾	200	1⅝	1⅝	1⅝	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1¾
¾	⅜	200	⅛	⅛	⅛	Mountain & Gulf		$4,000,000	$1	1½cQ	1-15-31	1¾	.76	1½	¼	¾	⅜
12⅛	3½	300	5½	5½	5½	Mountain Producers		$1,682,182	$10	40cQ	1- 2-31	28⅞	19½	22⅞	7	12⅛	3¾
3½	1⅛	700	1⅜	1⅜	1⅜	New Bradford Oil		$1,095,291	$5	10cQ	1-15-31	5⅝	4¼	5	2½	3½	1⅛
7¼	1½	200	2⅛	2⅛	2⅛	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
11¼	2⅛	100	2⅜	2⅜	2⅜	North Central Texas	(sh)	400,000	N.P.	15cQ	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
2½	¼	600	⅛	⅛	⅛	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	¼
4⅜	⅞	100	1⅜	1⅜	1⅜	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
10½	1½	100	2½	2½	2½	Red Bank Oil	(sh)	250,000	N.P.	....	.....	18	4⅞	16	9⅝	10⅛	1½
5⅜	⅝	100	1	1	1	Reiter-Foster	(sh)	388,584	N.P.	10cQ	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
8⅜	2	2,500	2½	2	2¼	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4¼	11	3	8⅝	2
2½	½	100	1⅜	1⅜	1⅜	Salt Creek Consolidated	(sh)	1,286,300	$10	10cQ	1- 2-31	7¼	5½	5⅞	1⅞	2½	½
15⅛	5¼	200	7	6¾	7	Salt Creek Producers	(sh)	1,496,859	$10	50cQ	11- 1-30	35	23⅛	25⅞	9	15¼	5¼
1	½	100	½	½	½	Savoy Oil		$750,000	$5	....	.....	3½	1	2½	⅛	1	⅛
4½	⅝	1,500	1⅛	1	1	Venezuelan Petroleum	(sh)	755,090	$5	5cQ	2-15-30	9¼	4¾	6½	1¾	4½	⅝
5	½	100	2	2	2	Woodley Petroleum		$500,000	$1	15cQ	3-31-29	8¼	4⅞	9½	2	5	½
2½	⅝	200	⅝	⅝	⅝	Y Oil & Gas		100,000	N.P.	....	.....	8⅜	2¼	2⅞	¼	2½	⅝

*Including one-half per cent monthly in stock. †Payable monthly and monthly stock dividend of one-half per cent. x Ex-dividend.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1931 High	1931 Low	Week ending January 21 Sales	High	Low	Close	Stocks		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
31½	16½	100	20	20	20	Amerada Corp.	(sh)	922,075	N.P.	50cQ	10-31-30	43⅞	27⅛	42⅝	17½	31½	16½
8	5½	100	8⅛	8⅛	8⅛	American Republics Corp.	(sh)	209,180	N.P.	....	.....	85	51⅜	64⅜	12½	37	5⅛
51	26½	40	30	29½	30	Associated Oil		$57,260,300	$25	50cQ	12-31-30	53⅜	37½	47¼	34½	51	30
51⅝	16⅝	2,700	20⅞	20½	20½	Atlantic Refining		$66,763,775	$25	25cQ†	12-15-30	66⅜	50	77⅞	30	51⅜	16⅝
34	8⅝	1,500	12⅜	12⅛	12⅜	Barnsdall Corp. A		$56,546,600	$25	50cQ	11- 6-30	54	20	49⅛	20	34	8⅝
30½	7¾	2,000	10⅞	10	10	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	12-15-27	..	..	47⅛	18	30½	7¾
71½	22⅜	300	29⅜	28½	28¾	General Asphalt	(sh)	413,333	N.P.	75cQ	12-15-30	94⅞	68	94⅜	42¼	71½	22⅜
116⅞	29¼	600	39½	38½	38½	Houston Oil		$24,968,600	$100	....	10-17-30	167	79	109	26	116⅞	29¼
11¾	6⅝	900	9	8⅝	8¾	Houston Oil (new)	(sh)	998,744	$25	....	.....	..	..	..	..	11¾	6⅝
28¾	3	900	4	4	4	Indian Refining		$12,565,070	$10	....	.....	39⅝	9	53	13⅛	17	2
12	3½	300	4⅛	4⅛	4⅛	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
10⅜	1¾	100	3	3	3	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5⅛	10⅜	1⅜
37	9¾	16,400	14¾	14⅛	14¼	Mexican Seaboard	(sh)	1,244,383	N.P.	....	10- 1-24	72	4⅝	59⅜	8¼	37	9¾
33	11	700	15¼	14⅝	14⅝	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	11-15-30	44½	25⅛	39⅞	22⅛	32	11
32	16	300	18⅛	18⅛	18⅛	Ohio Oil	(sh)	6,648,052	N.P.	50cQ	12-15-30	84	58½	79⅞	64¼	32	16
64¼	42	100	43	43	43	Pan American P. & T.		$50,084,700	$50	....	12-20-27	50⅞	38¼	69	40½	46½	42
67½	30	200	35	35	35	Pan American P. & T. "B"		$121,110,650	$50	....	12-20-27	58⅞	37⅜	69¼	40½	67¼	30
		No sales.				Pan American Western "B"		400,000	N.P.	....	1-30-27	28⅜	15½	18½	13⅝	..	..
12⅜	1¾	200	2¾	2¾	2¾	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21¾	11½	15¼	3	12⅜	1¾
80	47½	100	70	70	70	Panhandle P. & R. pfd.		$2,564,400	$100	....	7- 2-30	108	70	76	47½	80	47½
44⅜	11½	10,700	14	13⅜	13½	Phillips Petroleum	(sh)	2,593,075	N.P.	50cQ	1- 2-31	53⅞	35¼	47	24¼	44⅜	11½
2½	½	400	⅝	⅝	⅝	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	½
7⅛	1⅜	1,900	2⅝	2½	2⅝	Pierce Petroleum	(sh)	2,500,000	N.P.	10c	11-15-30	7	3½	5⅞	½	7⅛	1⅜
54	11¼	1,400	14¼	14	14	Prairie Oil & Gas		$60,848,000	$25	50cQ*	12-31-30	68	46	65⅜	40½	54	11¼
90	16⅝	1,600	19½	18¾	18⅞	Prairie Pipe Line		$101,250,000	$25	75cQ†	12-31-30	280	172	65	45	60	16⅝
11⅞	1	200	3	3	3	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
40	11½	10	12½	12½	12½	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
27¼	7⅝	400	10¼	10¼	10¼	Pure Oil		$75,959,250	$25	37½cQ	9- 1-30	31⅝	19	30⅜	20	27¼	7⅝
9¾	2¾	3,000	4⅛	4	4	Richfield Oil (new)		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9¾	4⅛
25⅞	5	200	6	6	6	Rio Grande Oil	(sh)	1.236,270	N.P.	50cQ	7-25-30	37½	32	42½	15	25¾	5
36½	36⅞	900	38¾	38	38	Royal Dutch, N. Y.	(sh)	611,303	....	$1.875	8-13-30	64	44⅝	64	43⅛	56½	36⅞
48⅜	26	100	31	31	31	Shell Transport & Trading Co.		£23,985,000	£1	$1.45	7-28-30	47⅞	41⅜	51½	40⅝	48⅜	26
25½	5¼	4,200	10	9½	9½	Shell Union Oil	(sh)	13,066,497	N.P.	35cQ	6-30-30	39¼	23¼	31¾	19	25½	5¼
8	5⅝	800	8	8	8	Simms Petroleum		$8,353,620	$10	40cQ	9-15-30	27¼	18⅜	40⅛	15	37	5⅝
32	9¾	7,300	12¼	11½	11⅝	Sinclair Consolidated	(sh)	5,500,000	N.P.	25cQ	1 -15-30	46¾	17⅜	45	21	32	9¾
112¼	86	800	96	95	96	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	11-15-30	110	102½	111	103	112¼	86
42	8½	800	8⅞	8⅝	8⅝	Skelly Oil		$27,441,250	$25	50cQ	12-15-30	42⅝	25	40½	28	42	10⅛
75	42¼	2,200	47¾	46⅜	47	Standard of California	(sh)	12,594,098	N.P.	62½cQ§	12-15-30	80	63	81⅞	51½	75	42¼
49	14⅜	200	17	17	17	Standard of Kansas		$8,000,000	$25	50cQ	12-15-30	37¾	15	33⅜	18	49	14⅜
84⅞	43½	9,600	48	47	47¼	Standard Oil of New Jersey		$634,999,200	$25	25cQ*	12-15-30	59⅜	37¾	83	49	84⅞	32½
40⅜	19¾	7,400	23¾	22¾	22⅞	Standard Oil of New York		$445,223,675	$25	40cQ	12-15-30	33¼	28¾	48⅛	31¾	40⅜	19¾
70	39	600	40½	40⅛	40⅛	Sun Oil	(sh)	1,416,869	N.P.	25cQ	12-15-30	77	31½	68⅜	55	70	39
9⅝	¾	200	1½	1⅜	1⅜	Superior Oil Corp.	(sh)	776,979	N.P.	....	12-20-20	..	..	24	5¼	9⅜	¾
60½	28¼	4,500	32½	32	32⅛	The Texas Corporation		$246,204,900	$25	75cQ	1- 1-30	74¾	50	71⅞	50	..	..
14½	4	600	5	5	5	Texas Pacific Coal & Oil Co.		$9,304,890	$10	2½%A‡	12-31-29	26⅝	12⅛	23⅞	9½	14½	4
31	12	100	12¾	12¾	12¾	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	12-31-30	41½	19⅝	40	14	31	13
94⅞	68	100	77½	77½	77½	Tide Water pfd.	(sh)	19,947,000	N.P.	$1.50Q	11-15-30	100⅛	86	97½	85⅛	94⅞	71
17¾	5⅞	3,900	8⅛	7½	7½	Tide Water Associated	(sh)	5,560,424	N.P.	30cSA	1- 2-31	25	14¾	23½	10	17¾	5⅞
68¾	53	200	61	61	61	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	1- 2-31	..	..	90⅞	74⅛	89¾	55
30	20⅛	2,000	24¾	23¼	23½	Union Oil of California		$104,342,375	$25	50cQ	11-10-30	58	42⅜	57	42⅛	50	20⅛
38½	23	300	23½	23½	23½	Union Tank Car	(sh)	1,254,048	$100	40cQ	12- 1-30	128⅛	110	163¾	121⅞	38½	23
27	4¼	2,600	5¾	4¼	4¼	Warner-Quinlan	(sh)	632,948	N.P.	25cQ	7- 1-30	44⅞	26	42⅞	15	27	4¼
21	6½	100	7	7	7	Wilcox Oil & Gas	(sh)	428,907	N.P.	25cQ	5-10-28	..	..	29¾	12⅞	21	6½

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable inn stock. §Plus 2 per cent stock dividend. x Ex-dividend.
In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been splits in the stock.

GASOLINE DEMAND FAIR IN THE CHICAGO AREA

(Continued from Page 186)

shade quotations among even the sellers of fuel oil. February requisitions are about due and these will give the industry a better line on the quantity of oil that will be used by the industries than we have had so far this season. There has been little real change in the demand although there has been some good buying by a steel concern or two. Most of the larger users of fuel oils have contracts which are yet incomplete. They are drawing against these and are not placing spot orders. Most of the buyers are ordering cautiously and not accumulating stocks for several reasons. One of these is the lack of assured business in advance and another is the expectancy of lower prices a little later. There have been few inquiries for February needs yet but with the purchases made for February, the best of the season will be over, for March seldom runs as good for the reason that the use of oil for heating in the plant is about over. We may have a late spring which will help and we may have a sudden industrial pickup which would be most welcome but neither is assured at present and the industry must wait.

Lubs Mark Time

The lubricating oils are still marking time. The demand from all classes of buyers is light. Some claim Pennsylvania neutrals are a little stronger but the difference is hard to determine with so little business going. Buyers state that the low down on western bright stocks is 16 cents and that Pennsylvania might be bought at the same figure but not for the same low cold test. The local plants are still taking a good deal of business by quoting the same price as the more distant refineries and saving the buyer the freight costs.

Price Cutting

Price cutting over the territory is still going on and in certain parts is increasing, if anything. One of the worst spots is along the Indiana-Ohio state line. The chief offender, according to local oil men, is a company in Ohio. It is hoped this price cutting may be withdrawn in a short time as soon as existing contracts can be got out of the way. But there is a good deal of cutting going on in all parts of the territory due in a great measure to the wide margins and the slack demand. The most common cause for price cutting is a desire for more business. There is a station down in the Kankakee district which depends very largely for its business on the transient trade and the demand from a nearby golf club. Business was bad and the proprietor about ready to quit, thought he would try a price cut. He is still in business doing about 400 gallons of gasoline a day which will increase as soon as the club members begin to use their club.

Here is another story. A man with a station in this State secured the sale of a very good antiknock gasoline. He had been selling at 17¼ cents. He advertised that hereafter he would carry only the high grade antiknock gasoline and that his price would be 18 cents which he stated would make the cost of 5 gallons about 3 cents additional but in comparison with other grades of equal value the increased cost should have been 12 cents. He has nearly doubled his sales of gasoline. These two stories both of which are vouched for show the need of using brains when price cutting.

SINCLAIR ADDS TO PLANT

HOUSTON, Tex., Jan. 27.—The Sinclair Refining Co. is building additional facilities in its Houston, Tex., refinery which will increase the total capacity of the plant to 40,000 bbls. daily and the work is said to call for an expenditure of $4,000,000. Major additions were made to the plant last year and the building now under way is the continuation of a two-year expansion program. Included in the new equipment are additional topping stills, tanks and power plant.

PRELIMINARY PROGRAM FOR A.I.M.E. PETROLEUM DIVISION IN NEW YORK

The preliminary program for the 140th meeting of the American Institute of Mining and Metallurgical Engineers, to be held at New York February 16-19, includes the following papers to be read before the Petroleum Division:

Petroleum Division

A Discussion of Errors Occurring in Surveying Oil Well Bore Holes by an Oriented Drill-Pipe Method—by W. J. Travers, Jr.

Petroleum Research and Educational Facilities in Great Britain—by Ernest R. Lilley.

Permeability Studies of Pennsylvania Oil Sands—by Charles R. Fettke and W. A. Copeland.

Methods and Effects of Unit Repressuring in the Cook Pool—by G. P. Crutchfield.

Production Studies of the Deep Wells in the Big Lake, Texas, Field—by Kenneth S. Ritchie.

Proration in Texas—by David Donoghue.

Proposed Unit Operation Plans in California—by Joseph Jensen.

Some Legal Aspects of Unit Operation—by W. P. Z. German.

Co-operation Between Engineers and Lawyers—by Peter Q. Nyce.

Occurrence of Petroleum in North America—by Sidney Powers. (T.P. 377.)

Production—1930 Symposium

Domestic

Michigan, Indiana, Illinois, Ohio and Kentucky—by R. B. Newcombe and R. A. Smith.

Eastern District—by J. French Robinson.

Rocky Mountain District—by R. Clare Coffin.

Texas (General)—by M. G. Cheney.

Texas, Louisiana and Gulf Coast—by L. P. Teas.

Kansas and Oklahoma—by Henry Ley.

Louisiana, Arkansas and Mississippi—by H. K. Sherer.

California—by B. E. Parsons.

Texas Panhandle—by W. E. Hubbard and H. E. Crum.

Foreign

Argentina—by Gilbert P. Moore.
Africa—by W. B. Heroy.
Bolivia—by Gilbert P. Moore.
Canada—by L. C. Snider.
Trinidad—by William J. Millard.
Colombia—by J. T. Duce.
Mexico—by V. R. Garfias.
Irak—by B. B. Cox.
Peru—by O. B. Hopkins.
Rumania—by Ionel I. Gardescu.
Russia—by B. B. Zavoico.
Venezuela—by Charles W. Hamilton.

Geophysical Prospecting

A New Development in Electrical Prospecting—by Hans Lundberg and Theodor Zuschlag.

Mathematical Theory of Electrical Flow in Stratified Media with Horizontal, Homogeneous and Isotropic Layers—by D. O. Ehrenburg and R. J. Watson (T.P. 400.)

A Method for Determining the Magnetic Susceptibility of Core Samples—by William M. Barret (T.P. 394.)

Electrical Exploration Applied to Geological Problems in Civil Engineering—by E. G. Leonardon. (T.P. 407.)

Practical Geomagnetic Exploration with the Hotchkiss Superdip—by Noel H. Stearn. (T.P. 370.)

A Magnetic Method of Estimating the Height of Some Buried Magnetic Bodies—by A. S. Eve. (T.P. 408.)

DEFINITE IMPROVEMENT IN EAST COAST MARKET

(Continued from Page 187)

improved prospects in sight owners are asking for higher rates."

Fixtures for the week follow:

Danish Motorship Anna Maersk, 8,150 tons d.w., molasses, Java to two ports North Hatteras, $1.85, option Java and Philippine Islands, $5.25, option Philippine Islands, $5.10, February/March.

Dutch Motorship Moordrecht, 9,450 tons d.w., 7,700 tons cargo maximum, clean, Black Sea to Dunkirk and Rouen, 8/6, February 1/10.

German Motorship Julius Schindler, 3,950 tons d.w., gas oil, Constanza to Ceuta, 8/6, prompt.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended January 17 totaled 1,719,000 bbls., a daily average of 245,571 bbls., compared with 1,891,000 bbls., a daily average of 270,143 bbls. for the previous week and a daily average of 270,250 bbls. for the four weeks ended January 17. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	221,000
Boston	128,000
New York	869,000
Philadelphia	118,000
Others	227,000
Total	1,563,000
Daily average	223,286
At Gulf Coast ports—	
Galveston district	63,000
New Orleans and Baton Rouge	83,000
Tampa	10,000
Total	156,000
Daily average	22,285
At all United States ports—	
Total	1,719,000
Daily average	245,571
Daily average four weeks	270,250

Distribution of total imports is as follows:

Crude	666,000
Gasoline	333,000
Gas oil	99,000
Fuel oil	621,000

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended January 17 totaled 526,000 bbls., a daily average of 75,143 bbls., compared with 571,000 bbls., a daily average of 81,571 bbls. for the previous week and a daily average of 66,857 bbls. for the four weeks ended January 17. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	82,000
New York	75,000
Philadelphia	32,000
Others	147,000
Total	336,000
Daily average	48,000
At Gulf Coast ports—	
Total	190,000
Daily average	27,143
At Atlantic and Gulf Coast ports—	
Total	526,000
Daily average	75,143
Daily average four weeks	66,857

Distribution of total California oil receipts is as follows:

Gasoline	334,000
Gas oil	192,000

Shipments of California refined products for Atlantic and Gulf Coast ports during the week (with ownership of tanker moving the oil where such owner is an oil company) were as follows:

To New York—73,000 bbls. of distillate on the Acme (Standard Oil Co. of New York), and 97,000 bbls. of gasoline on the Empire Arrow (Standard Oil Co. of New York).

To Baltimore—46,600 bbls. of Diesel oil on the Manatawny, and 73,800 bbls. of gasoline on the Roanoke (The Texas Company).

To Philadelphia—76,500 bbls. of gasoline on the K. R. Kingsbury (Standard Oil Co. of California).

To Miami—78,000 bbls. of gasoline on the Atlantic Sun (Sun Oil Co.).

ELECT T. A. DINES HEAD OF REFINING COMPANY

(Continued from Page 190)

Several promotions in the Utah company were made effective at the meeting of the board of directors. M. J. Greenwood who has been connected with the company for the past 22 years and for several years in charge of sales was elected a vice president. He was formerly president of the Utah Manufacturers Association.

A. N. Johnson for the past eight years secretary and treasurer of the company was elected a vice president. W. R. Wallace who has been vice president for several years was re-elected. E. S. Holt who has been superintendent of the company's refinery at Salt Lake City since 1917 and W. H. Lovesy, purchasing agent of the company, were elected to the board of directors.

"It is our desire to continue as an integral part of Utah and the intermountain territory," Mr. Dines said, following his election as president. "Through the co-operation of our associates, the Standard Oil Co. of Indiana and the Midwest Refining Co., local officials of the Utah Oil Refining Co. have been able to build one of the outstanding institutions in the United States, and it is our aim and ambition to continue our policy of progress."

LOCATION OF FUEL LINE IMPORTANT IN BLENDING

(Continued from Page 189)

fuel pump or vacuum tank inlet, the gasoline temperature rose another 11° F. and in passing through the pump or vacuum tank a further increase of 12° F. was noted as an average for the automobiles tested. To this 41° F. rise the idling test after a 40-mile per hour run showed an additional rise of as much as 19° F. The climbing tests gave an increase similar to that in idling.

8 Pounds Vapor Pressure

These temperature data show that gasoline must have a Reid vapor pressure of less than 8 pounds per square inch at 100° F., if vapor lock is to be avoided when driving 40 miles per hour in the hypothetical average car with an atmospheric temperature of 90° F. For protection during idling after a long run the gasoline must have a vapor pressure of less than 6 pounds per square inch. And these vapor pressure values give protection only in automobiles which have fuel line temperatures lower than the average observed in these tests.

If 80 per cent of the automobiles on the road, the writers point out, are to be protected from vapor lock troubles, the corresponding vapor pressures for 90° F. atmospheric temperature at 40 miles per hour and on idling after the 40-mile per hour run are 7 pounds per square inch and 5.5 pounds per square inch, respectively. These vapor pressures are very low and reflect seriously on the design of automobile fuel feed systems which will permit the attainment of such high fuel temperatures.

Messrs. Bridgeman and White offer the following points to be kept in mind in designing fuel systems:

1. The fuel feed line from the rear tank should preferably be on the opposite side of the car from the exhaust pipe.

2. If this is not feasible, the fuel feed line should be run outside of the frame channel and in addition should be thermally insulated from the exhaust pipe.

3. The fuel pump should be well insulated thermally from the crankcase and shielded from the exhaust manifold.

4. The fuel pump should be so located with respect to the engine supports and accessories that it will get its full share of cooling from the air stream.

HYDROGENATION PLANT DOWN

The I. G. Farbenindustrie A. G. has shut down its hydrogenation plant in Germany temporarily due to the cheapness of motor fuels available from other sources. This plant has employed the Bergius method by which heavy coal tar and petroleum residues and distillates are hydrogenated to make motor fuels. The unit does not have sufficient capacity to make its operation profitable under the present marketing conditions for the finished products. This is the second time this move has been found advisable, the first shut down occurring in September of last year.

DETERMINING THE GUM CONTENTS OF GASOLINE

(Continued from Page 42)

of Bureau of Mines Technical Paper 323B. The method consists of evaporating to dryness on a steam bath 100 ml. of gasoline in a clean, previously weighed copper dish. In the present work dryness was interpreted as meaning constant weight; so that after apparent dryness had been reached, the dishes were heated again for successive 2-hour periods until the weight remained constant to 1 mg.

In the glass dish method 50 ml. of gasoline was evaporated to apparent dryness on the steam bath in flat bottomed pyrex evaporating dishes approximately 80 mm. in diameter and 45 mm. in depth. After apparent dryness had been reached, the dishes were transferred to an air oven held at 102° C. (216° F.) and heated to constant weight.

The air jet method differed from the glass dish method only in that evaporation was accelerated by a vertical jet of air at room temperature, flowing at a rate of approximately 300 ml. per second. The air was filtered to remove dust particles by passage through a tower packed alternately with fine mesh copper screens and absorbent cotton. The jet consisted of a plain glass tube of 8 mm. inside diameter, the end of which was approximately 2.5 cm. above the center of the original surface of the liquid.

Meticulous Care

In all cases the dishes were cleaned with meticulous care. Any gum left from previous determinations was softened and dissolved by means of chloroform, after which the dishes were scrubbed with soap and water. The inner surfaces of the copper dishes were polished with steel wool, and the outer surfaces were carefully cleaned but not burnished. They were then dried with a cloth, placed in a desiccator for one-half hour and weighed to 0.1 mg. After preliminary cleaning with chloroform and soap and water, the glass dishes were treated with a solution of potassium dichromate and sulphuric acid at room temperature, rinsed with tap water and finally with distilled water. They were then dried with a lint-free cloth, placed in an air oven at 102° C. for 15 minutes, allowed to cool in a desiccator for 20 minutes and weighed to 0.1 mg.

The gasolines were measured with carefully cleaned dry pipettes, no two gasolines being measured in the same pipette without intermediate cleaning. All dishes after cleaning were handled with crucible tongs with jaws sufficiently wide to encircle the dish and specially fitted with cork tips.

Each test was run in duplicate at the same time and all comparative tests on each sample of gasoline were run on the same day. If there was any difference in the time required to bring duplicate samples to apparent dryness, both were left on the steam bath until the one requiring the longer time had satisfied the conditions for apparent dryness.

The time necessary to evaporate the gasoline to apparent dryness by the three methods differed greatly. Using a copper dish, 4 to 10 hours was usually necessary to evaporate 100 ml. of gasoline. In the glass dish method, 50 ml. reached apparent dryness in from 2 to 5 hours; while, by evaporation under a jet of air, this time was decreased so that from 10 to 60 minutes was required.

Test for Accuracy

In accordance with the criterion previously mentioned as a test for accuracy of method, determinations were made by each method on a 50 per cent blend of every sample with a gum-free gasoline. The latter was a freshly distilled Domestic Aviation Gasoline on which blank runs were made to verify the absence of gum.

The technique employed in bringing the dishes to constant weight consisted in successive 2-hour periods of heating, followed by a 20-minute period of cooling in a desiccator and then weighing to 0.1 mg. until the weight after such procedure remained constant to 1 mg. in the case of gasolines of high gum content and to 0.5 mg. in the case of those having a low gum content.

It was found that heating to constant weight within the limits mentioned was a very laborious procedure and required, on the average, from 12 to 16 hours of heating. Examples of the change in weight with the time of heating are shown graphically in Figure 1 for three fuels evaporated by the air jet method, in which the dishes were heated until the weight became constant within the error of the balance. The time of heating required in order to bring the dishes to constant weight within 1.0 or 0.5 mg. according to the gum content was as follows:

Copper dish, hrs.	5 to 29
Glass dish, hrs.	5 to 22
Air jet, hrs.	3 to 16

In some of the later tests a more rigid specification of constant weight was employed.

Data on 20 gasolines and 50 per cent blends by the three methods are given in Table 1. The results are expressed for comparability as milligrams of gum per 100 ml. of gasoline. The lower row of figures for each gasoline are the data on the blends. The average percentage and the actual deviations between duplicates are given in Table 2. Whereas, on the percentage basis, there is not much difference between the reproducibilities, the actual deviations indicate that the air jet and glass dish methods give much more reproducible results than the copper dish method, and the air jet method gives slightly more reproducible results than the glass dish method.

Values Obtained

The values obtained by the copper dish method are, on the average, very much higher than those by the other two methods. For gasolines with high gum content, the glass dish method seems to give higher results than does the air jet, while for those of low gum content the two methods give essentially the same values. There does not appear to be any relationship between the results obtained by the three methods. A more legitimate comparison could have been made if 50 ml. of gasoline had been evaporated in the copper dish determinations rather than 100 ml.

A comparison of the values on the 50 per cent blends by the copper dish method with the corresponding values on the original fuels shows that the 50 per cent blends in general give a value much less than one-half that on the original sample and, further, that there is no apparent relation between the two sets of values. With the glass dish method there is more evidence of a relation between the results on the original samples and on the blends, although in this case also the values on the blends are less than one-half of those on the original samples. Only in the case of the air jet method is there, on the average, an approximation to a 50 per cent quantitative relation.

Study of the Air Jet Method

Since the data given in the preceding section indicate that the copper dish method is not sufficiently reproducible and is far from satisfying the 50 per cent relation, no further work was done by this method. However, it seemed worth while to investigate further the air jet method, particularly the effect of variations in air flow on the results obtained. Accordingly, an additional series of comparative tests was made using three different air flows; namely, 0, 320 and 680 ml. per second. The first of these, with zero air flow, is identical with the glass dish method mentioned previously in this paper. In the other two cases, control and measurement of the air flow were effected by means of an orifice meter. The jet consisted of a straight glass tube 12 mm. in diameter, which was used in order to obtain an increased air flow. Since the main function of the air jet is to facilitate the removal of the gasoline vapors, the size of jet for a given air flow should not have any appreciable effect.

In these experiments a somewhat more rigorous definition of evaporation to constant weight was employed. After the gasolines had been evaporated to apparent dryness on the steam bath, the dishes were placed in the air oven at 102° C. (216° F.) for a period of 16 hours, after which they were cooled in a desiccator and weighed. Successive 2-hour periods of heating, followed by cooling and weighing, were then employed until the weight reached a constant value within the error of the balance. On the average, constancy of weight was obtained after 22 hours of heating.

Data on Air Flows

Data on the three air flows were secured on 13 gasolines and their 50 per cent blends, and are shown in Table 3. For the high gum gasolines, values by the glass dish method (zero air flow) are higher than those obtained with the two other rates of air flow, whereas in the case of low gum content there is very little difference between the results of any of the methods. The data obtained using air flows of 320 and 680 ml. per second are in very good agreement, indicating the negligible effect of air flow over this range. This is shown graphically in Figure 2. As in the previous series, values on the blends by the glass dish method tend to be considerably less than one-half the values on the original samples. In the other two cases the values on the blends are about one-half of those on the original samples, with slightly better agreement in the case of the larger air flow.

The data in this and the previous series are shown in Figure 3, where the milligrams of gum per 100 ml. in the blend are plotted against one-half of the corresponding values for the original samples. While the average deviation from the 50 per cent relation is only 2.6 mg., the plot indicates that the values on the blends are more nearly 45 per cent of the value on the original gasoline. The average deviation from the latter relation is 1.8 mg.

Further Tests

A limited series of further tests was made on the effect of air flow employing various rates of air flow from zero up to 900 ml. per second. The results are shown in Figure 4. It is noted that the values decrease rapidly down to an air flow of about 300 ml. per second and that beyond that point there is very little change in the results. There appears to be a slight indication, however, that the values go through a minimum and tend to increase again. This effect could not be investigated further, since 900 ml. per second represents at least the maximum air flow which can be employed, without danger of blowing some of the gasoline out of the dish with the design of jet used and with a fixed position of 2.5 cm. above the original surface of the gasoline.

From the data recorded in Tables 1 and 3, it appears that, of the methods investigated, the air jet method with an air flow of 300 to 700 ml. per second is the one which gives the lowest gum content and is the one which most nearly satisfies the quantitative relation as regards 50 per cent blends with a gum-free gasoline. Littlejohn, Thomas and Thompson[9] have also investigated the air jet method and standardized upon a definite procedure. However, they have chosen a smaller air flow for the test method.

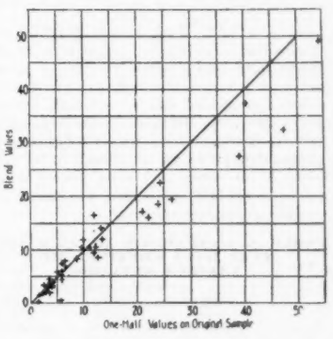


Figure 3—Data from 50 per cent blends with a gum-free gasoline plotted against one-half the values from the original samples.

The chart indicates that the values on the blends are more nearly 45 per cent of those on the original samples than 50 per cent.

No experiments were made in this investigation on the effect of using an inert gas in place of air in the air jet method. Hunn, Fischer and Blackwood[10] found that the results using carbon dioxide or nitrogen are in agreement with those obtained when air is employed.

There is a further test for a quantitative method based on the closeness with which the gum content of a known blend of two gasolines containing gum approximates the value computed from the measured gum content of the gasolines themselves. Accordingly, this criterion was applied to the air jet method and data were obtained on nine pairs of gasolines. These values are shown in Table 4. In each

[9]See Journal of the Institute of Petroleum Technologists, vol. 16, 1930, p. 684.
[10]See S.A.E. Journal, January, 1930, p. 31.

CONTINUED DECLINE IN PRODUCTION IN COMODORO RIVADAVIA REGION

Continuation of the decline in crude oil production in the Comodoro Rivadavia region, although offset partially by increased production in other areas, resulted in a decrease of nearly 500,000 bbls. in the 1930 output of crude oil in the Argentine Republic, as compared with the preceding year, according to the estimate of production published in the January number of the Argentine journal, "Petroleous y Minas." Total crude oil production declined from the official figure of 9,391,385 bbls. in 1929 to the estimated figure of 8,909,772 bbls. for 1930, a decline of 481,613 bbls., or approximately 5 per cent.

Production in the Comodoro Rivadavia area dropped from 8,161,325 bbls. in 1929 to 7,274,649 bbls. in 1930, a decrease of 886,676 bbls., or nearly 11 per cent, while an increase from 1,023,226 bbls. in 1929 to 1,358,627 bbls. in 1930 was recorded for Plaza Huincul and from 206,677 bbls. in 1929 to 276,496 bbls. in 1930 for the more recently developed production in the northern province of Salta. Government operations accounted for 5,207,491 bbls. of the 1930 output and private operations for 3,702,281 bbls., as compared with government production of 5,485,955 bbls. and private production of 3,905,430 bbls. during 1929. The decline in production was evenly divided between the two classes of production, as government production accounted for 58.4 per cent of the republic's total during both 1929 and 1930.

CRUDE OIL PRODUCTION, ARGENTINA, 1928-1930

(Barrels of 42 gallons each)

	1928	1929	1930
Government	5,413,199	5,485,955	5,207,491
Private	3,657,396	3,905,430	3,702,281
Total	9,070,595	9,391,385	8,909,772
Regions—			
Comodoro Rivadavia	8,196,417	8,161,325	7,274,649
Plaza Huincul	761,845	1,023,226	1,358,627
Salta	97,866	206,677	276,496
Mendoza	14,467	157	.....
Total	9,070,595	9,391,385	8,909,772
Companies:			
Comodoro Rivadavia:			
Government	5,107,048	5,077,369	4,547,670
Railroad Oil Co.	1,337,178	1,549,688	1,314,358
Astra & Orient	697,166	830,456	1,016,024
Ind. & Coml.	616,682	528,066	365,021
Solano	74,360	69,211	24,613
Diadem Group	363,983	106,296	6,963
Others	.....	239	.....
Plaza Huincul—			
Government	298,975	389,054	569,245
Standard	417,392	558,435	659,550
Astra	.....	.....	8,234
Others	45,478	75,737	121,598
Salta—			
Government	7,177	19,530	90,576
Standard	90,689	187,147	185,920
Mendoza—			
El Sosneado	14,467	157	.....
Total	9,070,595	9,391,385	8,909,772

case, the gasolines were blended in equal parts by volume. It is seen that the calculated values are in fair agreement with the observed values.

Effect of Atmosphere on Gum Content

The generally accepted theory for gum formation in gasolines involves the assumption that gum is the result of partial oxidation and polymerization of unsaturated hydrocarbons present in the gasoline. From this standpoint, it seems reasonable to assume that the replacement of oxygen by an inert atmosphere might tend to reduce gum formation during evaporation. As a preliminary test of this assumption, a few experiments were made in which gasolines were evaporated in atmospheres of carbon dioxide or nitrogen. Special evaporation containers were constructed from 100-ml. Florence flasks. The neck was drawn down, and into this was sealed an inlet tube with the opening about 2 cm. above the surface of the liquid when 50 ml. of gasoline was present. Each container was provided with a side arm leading to a vacuum line. In

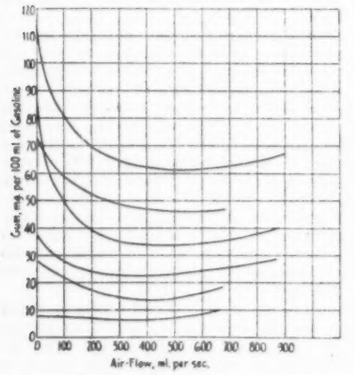


Figure 4—Effect on gum content of variation in rate of air-flow used in the air-jet method.

The curves are plotted from data on six different gasolines and the air-force rates ranged from zero to 900 ml. per second.

making a test, flasks containing 50 ml. of gasoline were placed in position on the steam bath and carbon dioxide or nitrogen was led into them through a needle-valve and passed out at one-half atmosphere pressure, carrying with it gasoline vapors. The gasoline was evaporated to apparent dryness on the steam bath. Afterwards the containers were placed in an air oven at 102° C. (216° F.) until the weights remained constant.

TABLE 1—COMPARISON OF GUM CONTENT DATA OBTAINED BY VARIOUS METHODS

	Method					
	Copper dish		Glass dish		Air jet	
Sample—	Ml. of gum per 100 ml. of gasoline					
D	815	836	68	75	19	20
Blend	289	297	33	35	10	11
E	361	412	17	18	8	8
Blend	33	32	9		4	4
F	92	93	18	24	12	12
Blend	39	48	6	9	7	8
G	601	662	59	70	15	11
Blend	147	192	17	18	8	8
H	283	308	81	82	70	87
Blend	95	119	28	28	25	30
I	147	132	32	34	25	28
Blend	26	39	15	13	15	13
J	212	221	70		46	51
Blend	52	51	23	28	24	21
K	382	227	19	17	6	5
Blend	116	95	10	6	2	2
L	189	180	13	16	7	8
Blend	28	26	7	7	3	2
M	424	282	9	7	4	8
Blend	19	18	4	5	3	3
N	6	6	4	4	3	3
Blend	5	3	0	3	0	0
O	40	32	18	17	8	6
Blend	9	10	8	8	3	4
P	98	76	20	22	12	11
Blend	24	30	9	9	1	1
Q	31	28	25	23	17	18
Blend	7	5	8	8	9	8
R	16	17	21	21	20	20
Blend	15	7	7	7	12	12
R_1	38	49	35	32	12	11
Blend	16	18	16	14	6	6
T	73	194	36	32	24	24
Blend	32	58	14	14	18	15
U	75		22	22	24	21
Blend	18	14	11	10	10	11
V	699	734	310	310	109	
Blend	239	194	84	95	50	48
W	503	517	65	76	8	7
Blend	105	97	7	6	1	3

The data obtained are shown in Table 5. Values by the air jet method are also given for comparison. It is seen that results obtained by evaporation in atmospheres of carbon dioxide or nitrogen are, in general, higher than those by the air jet method. It was found that the method described was cumbersome and did not give reproducible results in addition to requiring an excessive amount of time. It was considered that evaporation under a nitrogen jet in a nitrogen oven at 100° C. (212° F.) would be more convenient and might improve the reproducibility and reduce the time required. An apparatus for this purpose is now in the process of construction. It is planned to provide the oven with six jets which may be removed and permit its use as a steam oven. In either case, heating will be by electricity and it will be possible to study the effect of temperature as well as the effect of atmosphere.

TABLE 2—AVERAGE DEVIATIONS BETWEEN DUPLICATE DETERMINATIONS

Method—	Average deviation, per cent	Average absolute deviation, mg.
Copper dish	22.5	*23.8
Glass dish	23.0	2.5
Air jet	13.2	1.7

*Excluding the worst three cases, the average absolute deviation is 12.9 mg.

Analysis of Determination

If it is accepted that the criterion for a satisfactory method for gum content determination is that it shall give the lowest value, it is to be concluded from the present work that the air jet method is the most satisfactory of those investigated. However, this method does not entirely satisfy the 50 per cent relation, nor is there any good evidence that it obviates the formation of additional gum during evaporation. A logical method of ensuring freedom from transformation of potential gum into gum would be to use a solvent for gum which is immiscible with gasoline. A priori, the two conditions appear to be incompatible. In practice, however, it was found that an aqueous solution containing 90 per cent of ethyl alcohol had moderate extracting ability as regards gum and was reasonably insoluble in gasoline. Accordingly, some experiments were made with the intention of removing the gum by exhaustive extraction and evaporating the extract liquid to dryness on a steam bath.

TABLE 3—COMPARISON OF DATA OBTAINED USING DIFFERENT RATES OF AIR-FLOW

	Zero Ml. per sec.		320 Ml. per sec.		680 Ml. per sec.	
Sample—	Ml. of gum per 100 ml. of gasoline					
1	16	16	14	13	12	12
Blend	7	7	7	7	6	6
2	4	4	4	4	4	5
Blend	2	4	2	2	2	2
3	4	6	6	4	5	5
Blend	2	2	2	2	4	3
4		29		10	10	10
Blend	12	12	6	6	6	
5	178	163	93	96	81	
Blend	52	50	33	32	38	37
6	9	9	13	11	11	13
Blend	4	5	4	5	4	6
7	2	2	4	3	5	6
Blend	1	1	2	1	3	2
8	42	48	25	24	26	28
Blend	16	19	10	11	12	12
9	276	222	44	52	53	
Blend	71	86	18	19	20	19
10	24	20	23	25	27	24
Blend	7	9	9	10	8	9
11	11	12	8	8	8	7
Blend	5	4	4	3	5	4
12	130	149	41	44	46	43
Blend	29	27	16	18	14	18
13	314	286	164	154	166	
Blend	106		67	70	75	

In doing this, 100 ml. of gasoline was shaken for 15-minute periods with successive 50-ml. portions of alcohol solution and each portion of extract liquid was evaporated to dryness separately. It was found that the distribution law held reasonably well and that practically all of the gum was removed in six extractions. This made possible an extrapolation to obtain the gum content of the gasoline. The results secured by this method are shown in Table 6. While the values are in fair agreement with those obtained by the air jet method, it was found that in some cases the alcohol solution became completely miscible with the gasoline after four to six extractions. Accordingly, the method was not investigated further.

Since none of the methods studied have shown capability of giving true gum contents, it seems worth while to analyze the problem from the standpoint of the variables involved in the hope that the analysis may indicate a more promising mode of attack on the problem. Aside from the idiosyncrasies of gasoline composition, it appears that there are three variables involved; namely, (a) time of evaporation; (b) temperature, and (c) atmosphere surrounding the gasoline during evaporation. All three of these variables have entered into each of the methods studied and in order to arrive at an entirely satisfactory answer to the problem, it seems necessary, therefore, to investigate the effect of each of these variables separately.

Independent Study Difficult

The independent study of the effect of time of evaporation on the results is

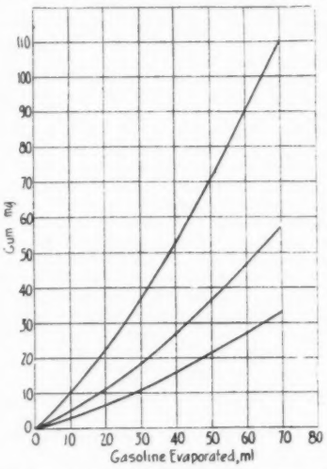


Figure 5—Effect of difference in volume of sample evaporated.

Weight of residue in the dish is plotted against the volume of gasoline evaporated by the air-jet method.

particularly difficult and, in fact, it is hard to conceive of any method whereby this can be studied independently of temperature and atmosphere. Under these conditions, a logical method of procedure, if feasible, would be to make the determinations under conditions of instantaneous evaporation. The realization of this seems possible only by making determinations with various times of evaporation and extrapolating the results to zero time. One method of accomplishing this would be to evaporate a given volume of gasoline at the same bath temperature and in the same atmosphere in different lengths of time by varying the rate of air flow.

TABLE 4—GUM CONTENTS OF BLENDED GASOLINES

First gasoline		Second gasoline		50/50 Blend— Observed		(*)
138	141	10	8	63	64	74
37	36	18	19	25	23	27
16	13	20	20	17	17	17
97	92	18	17	58	57	56
125	123	2	2	55	57	63
103	99	10	11	61		56

*Calculated.

Another method which could be used is the evaporation of different volumes of gasoline with consequent variation in the time required and the extrapolation to zero volume which coincides with zero time. Of course, the variables of temperature and atmosphere enter into all of these determinations at finite time of evaporation, but if their effects are sufficiently convergent their influence would be eliminated by extrapolation, and hence the intercept would represent the true gum content of the gasoline. If the effects are not sufficiently convergent, which can be determined by experiments at various temperatures and with various atmospheres, it would be necessary to make an extensive series of tests of the effect of temperature and atmosphere on the values for instantaneous evaporation. The complexity of the problem of studying these variables cannot be determined until considerable experimental information has been obtained. This work is now in progress.

One Method of Attack

As an indication of one method of attack, some experiments have been made in which various volumes of gasoline have been evaporated by the air-jet method. The type of results obtained is shown graphically in Figure 5, where the weight of residue in the dish is plotted against the volume of gasoline evaporated. The equations of the smooth curves through the plotted points are of the form $G = V(a + bV)$, where G is the actual weight of residue formed on evaporation of volume V of gasoline. This equation can be written in the form

$$100G/V = a_1 + b_1 V \quad (1)$$

where 100G/V is the gum content in each case calculated as milligrams per 100 milligrams of gasoline, where a is the gum content corresponding to instantaneous evaporation and b_1 is indicative of the quantity of gum formed during evaporation. The curves for three gasolines are shown in Figure 6, where the change in apparent gum content with volume of gasoline evaporated can be noted. The intercepts represent values of a_1, or the gum content corresponding to instantaneous evaporation. While the work has not progressed sufficiently far to draw any conclusions, the method of attack appears promising.

TABLE 5—COMPARISON OF DATA OBTAINED BY EVAPORATION IN ATMOSPHERES OF CARBON DIOXIDE AND NITROGEN BY ONE METHOD WITH RESULTS BY THE AIR JET METHOD

	Evaporation from flasks at reduced pressure				
	Carbon dioxide		Nitrogen		Air-Jet method
Sample	Ml. of gum per 100 ml. of gasoline				
A	9		..		13
B	5		..		7
F	26	26	..	12	11
Blend	13	17	..	8	7
G	36	26	..	15	11
Blend	25	19	..	8	8
H	136	131	..	70	87
Blend	86		..	25	30
I	57		..	25	29
Blend	38	37	..	13	16
J	132	152	..	46	51
Blend	69	63	..	24	21
T			35	33	24	24
Blend			18	17	18	15
U	..		27	18	24	21
Blend	..		15		10	11
V	..		154	159	109	
Blend			109	62	50	48

A similar set of experiments has been found by Littlejohn, Thomas and Thompson[11], who found an analogous decrease in gum content with decrease in volume of gasoline evaporated. They presented their data both in tabular and graphical form and considered that the lines through the plotted gum contents exhibited curvature. An analysis of their data, however, indicates that no justification exists for drawing other than straight lines through the points, which is in agreement with the preliminary information obtained in the present work.

Ultimate Criterion

The ultimate criterion of the satisfactory nature of a laboratory test for gum content is that it shall indicate the relative amounts of gum which gasolines will deposit in engines. The present investigation has shown that reproducible methods are available, but there is insufficient evidence to show that any of these is significant as regards gum deposition in the engine. Two general modes of attack might be employed. In the first place, accumulation of a large volume of engine test data under a variety of operating conditions on a considerable number of gasolines, the gum contents of which were measured by the various available methods, might possibly indicate that one of these methods was satisfactory. However, there is almost complete lack of assurance that any of them would prove to be satisfactory and the acquisition of the test data is a very costly and time-consuming process. On the other hand, it is felt that a laboratory flow method can be devised that will stimulate engine manifold conditions and which could be used as a preliminary criterion for the choice of method to be employed in the determination of gum content. Engine tests would then be necessary only as a check.

Two general modes of attack are likewise available in arriving at a suitable method for the determination of gum

[11]See Journal of the Institute of Petroleum Technologists, vol. 16, 1930, p. 684.

content. The first of these would consist in selecting, in a haphazard manner, various methods for comparison with the laboratory flow method. The second and more logical mode would be to establish a method for the determination of the true gum content and then use this as a basis for modification if data on true gum contents cannot be successfully correlated with the results by the laboratory flow method. This latter procedure appears more logical, since the true gum content seems to be a property of the gasoline, independent of the method of test. The true gum content method therefore forms a very satisfactory foundation for the development of the desired routine gum method.

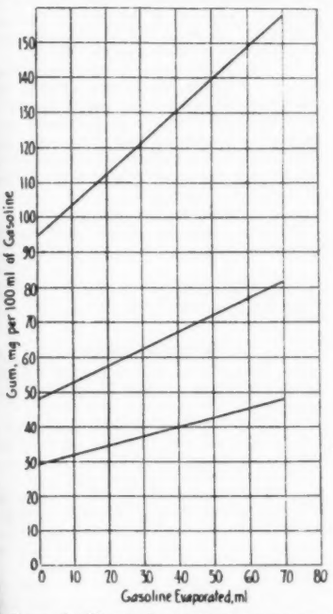


Figure 6—Change in apparent gum-content of three gasolines with volume evaporated.

The intercepts indicate the gum content corresponding to instantaneous evaporation.

TABLE 6—COMPARISON OF DATA OBTAINED BY THE ALCOHOL-EXTRACTION METHOD WITH THE AIR-JET METHOD

Sample	Alcohol-extraction Mi. of gum per 100 ml. of gasoline		Air-Jet Mi. of gum per 100 ml. of gasoline	
C	90		88	89
D	27		19	17
E	50		32	
E1	25		16	

Summing Up

In summing up, a logical mode of attack on the problem of the development of a significant method for the determination of the gum content of gasolines consists of three steps:

1. The development of a method for the determination of true gum content.
2. The correlation of data by this method, modified, if necessary, with results by a laboratory flow method simulating manifold conditions.
3. The verification of the above correlation by means of engine tests.

It is planned to proceed along these lines in an effort to place the problem of gum in gasolines on a more rational basis.

The investigation reported herein was undertaken as part of an extensive program for the study of the gumming characteristics of gasolines and was made possible by the co-operation of the Army Air Corps.

PRORATION OPPONENTS ARE GIVEN HEARING

(Continued from Page 33)

permissible flow be raised to 5 per cent of potential until developments in the market and in the field should show justification for further increases. None of the old settled production wells in the state, Mr. Franklin said, should be prorated.

Pipe Line Outlet

It was pointed out that the Oklahoma City Field is served by 10 pipe line companies assuring transportation for 254,000 bbls. of crude oil daily from the field, and that an additional 20,000 bbls. daily may be handled when another company completes its line February 1.

The pipe line companies, the capacity of their lines, and the amount of crude they are now taking, are given in order:

Oklahoma Pipe Line Co., 18,000 bbls., 18,000 bbls.; Prairie Pipe Line Co. (two lines), 35,000 bbls., 800 bbls.; Empire Pipe Line Co., 35,000 bbls., 18,000 bbls.; Sinclair Pipe Line Co., 35,000 bbls., and the Texas-Sinclair Pipe Line Co., 45,000 bbls., 9,400 bbls.; Magnolia Pipe Line Co., 25,000 bbls., 13,000 bbls.; Shell Pipe Line Co., 6,000 bbls., 3,500 bbls.; Champlin Refining Co., 18,000 bbls., present taking not given; Stanolind Co., 55,000 bbls., 15,000 bbls. The Indian Territory Illuminating Oil Co. is running 1,200 bbls. of crude daily through its pipe line in the field. The Tidal Oil Co. is transporting 4,000 bbls. daily over the Magnolia line not credited to the Magnolia company's figure above. The Continental Oil Co. is completing an 8-inch pipe line to take oil from the field. The line will be completed February 1, and will have a daily capacity of 20,000 bbls.

The capacity of these lines, according to Otto Bradford, umpire for the Oklahoma City Field, could be increased by 65,000 bbls. daily by the addition of booster units.

Loading racks in the field can take 284 tank cars at one filling, and this number of cars may be filled three times a day, according to the testimony of Umpire Bradford.

Asks About Markets

Before witnesses were called to testify for the petitioners Commissioner C. C. Childress asked for a clarification of references to potential in the Oklahoma City Field; for concrete references in speaking of available markets, and for a clear definition of ratable takings. The last mentioned having relation to takings by pipe line companies.

Frank Burford, counsel for the Indian Territory Illuminating Oil Co., and others seeking retention of the present proration order, pointed out that before raising the amount that may be produced at the wells it must be proved that a reasonable market exists above that already served by producers, and that when this is done the new demand must be allocated to each producer in the field. Mr. Burford said that concrete evidence of discrimination must be shown, although he admitted that perhaps production in Texas fields held an advantage over that in Oklahoma City fields, and hoped for a readjustment if this is the case.

Among the witnesses testifying were: Jack Travis, Capital Producing & Refining Co.; H. H. Champlin, Champlin Refining Co.; C. G. Kibben, R. M. McArthur and others; Leon Melekov, Donleon Oil Co.; Sam Lewis, Scott & Co.; B. G. Patten, Plains Petroleum Corp.; Reuben Roddie, Capital Producing & Refining Co. and Marco Oil & Gas Co.; John H. Peacock, Peveto Peacock Refining Co.; E. W. Jones, Jones Brothers Drilling Co., and Harry Chandler, Sinclair Oil & Gas Co.

All declared that under the present proration order they had been unable to make contracts with purchasers because of the uncertainty of their production, and also that the pinching in of their wells, or wells supplying them with crude oil for their refineries, was causing their destruction at a rapid rate.

During the day the attorney general, J. Berry King, asked for an injunction and receivership for the Corporation Commission on the Donleon company's No. 1 Hunzicker, and for injunction and receivership on the Morgan Petroleum Corp.'s No. 1 Stout, one of the field's recent wild wells. Hearing was set for Friday in District Court.

Citations were filed by Umpire Branford against Hall & Briscoe, Inc., on a total of 23 counts on their No. 1 Grace, and No. 1 Mueller, and against Oils, Inc., on one count on their No. 1 Ross.

Governor Murray's Position

With the evidence increasing that Gov. William H. Murray looks upon the oil situation in Oklahoma as an emergency matter which calls for strong executive direction in the formulation of remedial legislation, scores of rumors, some of them disconcerting, have arisen in connection with recommendations the Governor will receive from the committee of nine he appointed to inform him on the best means to place the oil industry in the state upon a sounder basis.

This committee is composed of oil men, and has been called the oil legislature by Governor Murray. The members are Roy M. Johnson, independent operator, Ardmore; Wirt Franklin, president of the Independent Petroleum Association of America, Oklahoma City; H. H. Champlin, Champlin Refining Co., Enid; E. B. Howard, president of the Oklahoma Oil Association and former congressman from Tulsa; C. A. Owens, retired oil operator and chairman of the Governor's committee, Los Angeles, Calif.; E. B. Reeser, president of the American Petroleum Institute, Tulsa; Pat Malloy, special counsel of Sinclair Oil & Gas Co.; W. N. Davis, vice president Phillips Petroleum Co., Bartlesville; and W. R. Ramsey, Ramsey Petroleum Corp., Oklahoma City.

C. A. Owens, Los Angeles, Calif., chairman of the committee appointed by Governor Murray of Oklahoma to suggest revisions in the State's laws affecting oil.

The committee is expected to present its findings and suggestions to Governor Murray Thursday, January 29, so that the Governor may present his interpretation and conclusions from the report of his committee to the legislature February 10. In the meantime, it is understood, there will be no oil legislative action awaiting the views to be set forth by the Governor in his special message on that date.

From a reliable source it was learned that as the date for submitting the findings of the committee to the Governor approached the committee was divided four to five, for and against the present proration schedule, respectively. However, only two are known to be in favor of the present schedule, while another is classed as doubtful and the fourth can not be determined. At the time the appointments were announced it was felt generally that seven of the members were opposed to the proration rule now in effect.

The appointment of C. A. Owens, who filled an executive position for six years in the Middle States Oil Co., of which former Gov. C. N. Haskell was president, as chairman, appealed to Governor Murray because Mr. Owens has retired from the oil business, has lived outside of the State long enough to acquire a better perspective, and has no interests in Oklahoma which might color his judgment.

Chairman Owens' View

Mr. Owens explains the Governor's move in appointing the "oil legislature" as follows:

"Governor Murray is a practical man. Practical experience directs him to call upon oil men for advice because he frankly confesses that he knows no more about the business than that some men drill and go broke, others grow rich until their oil properties are taken away from them, and still others continue to amass wealth and holdings. He feels that there is a lot of corruption in the oil business and that expert advice is needed to distinguish the true from the false.

"But, if Governor Murray does not know anything about the oil industry, he does know a great deal which makes him the ideal leader out of Oklahoma's present submergence. Oklahoma, rich in oil, is surrounded by a greater sea of oil and neither tariff nor embargo will help her. Oklahoma must be given the right to exploit her resources, wisely, and in such a way that the markets she will serve can be assured of a steady supply of oil.

"As a practical man Governor Murray will first be sure that a larger market is available for the additional production which will follow an increase in the permissible flow from the wells. Governor Murray has seen that other states, Texas specifically, have acted unfairly in the matter of proration, and you may be sure that he will find a remedy for this.

"The Governor," Mr. Owens concluded, "is also aware of the limited powers of the State in the matter of telling operators what they shall do. He also knows that the issue is not local but of national and international interest, and that consequently the federal government must be sought for remedial measures."

One of the reports concerning probable recommendations of the committee was to the effect that Chairman Owens suggested the building of huge cement reservoirs underground, and the cementing of draws and creeks to retain oil, so that when these stores were filled they might be bonded by the State. A provision dealt with the issuance of scrip or notes on the oil as collateral.

PRAIRIE-RICHFIELD OF NEW YORK RUMORS

(Continued from Page 196)

offices. Fractional shares will not be issued, but fractional interests will be adjusted on the basis of the mean of the high and the low paid for The Texas Corporation stock on the New York Stock Exchange on January 14.

Kendall Refining

At the annual meeting of the stockholders of the Kendall Refining Co., the board of directors was re-elected as follows: Otto Koch, J. H. Bovaird, F. D. Gallup, Frank L. Smith, Louis E. Koch, A. J. Bond, Perry E. Wurst, I. H. Shearer, J. B. Fisher and H. H. Greene. The officers will not be elected until the February meeting.

It was voted to convert 3,000 shares of preferred stock to 30,000 of common. The preferred had $100 par and the new common, $10 par. The company will shortly redeem all outstanding common stock of $100 par and issue in lieu thereof new stock to the amount of 10 shares of new $10 par stock for each one share of the old.

Trinidad Oil Fields

Trinidad Oil Fields Operating Co., Ltd., controlled by the Standard Oil Co. (New Jersey), has acquired the government license lands of Venezuela Consolidated Oilfields, Ltd., in Trinidad. The land involved consists of approximately 59 acres and 10 acres of freehold lands in the Fyzabad-San Francique district. There are four producing wells on the government lands, yielding about 150 bbls. per day, and seven wells on the freehold lots, with about the same production.

Trinidad Oil Fields Operating Co., Ltd., is now completing a well on the government lands which was started some time ago by Venezuelan Consolidated. The

government license lands involved in the deal were originally granted to M. Hamel-Smith, who drilled one well and then assigned the license to Venezuelan Consolidated. The Trinidad government has sanctioned Venezuelan Consolidated's sale to the New Jersey subsidiary.

Richfield Oil

Announcement was made in New York of the organization of a committee to protect the interests of the holders of the common stock of the Richfield Oil Co. of California, for which a receiver was appointed in Los Angeles on January 15. Philip De Ronde, president of Hibernia Trust Co., New York, is chairman of the committee, the other members being S. P. Woodard, president of S. O. Woodard & Co., Inc., investment bankers; Harvey J. Carson, vice president of the Foreman-State Bank & Trust Co., Chicago, and C. B. Reynolds, vice president of the National City Bank of Cleveland. Stockholders desiring to co-operate with the committee for the protection of their interests have been requested to deposit their shares with the Chatham Phenix National Bank & Trust Co., New York, or with the Atlantic National Bank of Boston, Foreman-State Bank & Trust Co. of Chicago, or the National City Bank of Cleveland.

The Irving Trust Co., New York, and William C. McDuffie of Los Angeles have been appointed ancillary receivers in equity in New York for the Richfield Oil Co. of California, which has assets of more than $1,000,000 in this district. These assets represent, for the most part, sums due the California corporation from the Richfield Oil Corp. of New York, a subsidiary. The original receivership was established in California on January 15 when Judge William P. James appointed Mr. McDuffie receiver.

Formation of a protective committee to act in the interests of holders of the collateral trust series A, 6 per cent bonds of the Richfield Oil Co. of California was also announced today. The bondholders' protective committee includes Nion R. Tucker of Tucker, Junter, Dulin & Co., George Armsby of Bancamerica-Blair Corp., Stanton Griffis of Hemphill, Noyes & Co., Robert E. Hunter of Tucker, Hunter, Dulin & Co., and Harry J. Bauer, director of the Southern California Edison Co., Ltd. Security First National Bank of Los Angeles has been named as depository, while the American Trust Co. will serve in San Francisco and the Bank of America, N. A., in New York.

Phillips Petroleum

In an interview with the Wall Street Journal, Frank Phillips, president of Phillips Petroleum Co., commenting on conditions prevailing in oil industry during the last quarter of 1930 said:

"Prices of petroleum and its products have been demoralized, particularly in the West. Gasoline, the principal source of income, has sold at the lowest price in many years. Phillips Petroleum, in accordance with the general curtailment policy of the industry and complying with orders of state commissions, has largely reduced its current production of crude, notwithstanding that its developed potential supply of crude oil is several times larger than ever before in its history. The effect of these conditions with lower crude prices has been a heavy shrinkage to the entire industry in income and in inventory values during the fourth quarter which will be reflected in substantial losses to our company in common with many others. Pending completion of regular yearly audit now in progress, the full year's earnings cannot be more definitely forecast.

"The annual statement will not be ready until early in March. Action of directors on future dividends must be governed by company's earnings, economic conditions in the industry and general financial situation. The company is carrying out its program of gasoline and natural gas pipe line construction and increased markets. This has occasioned some financing which has been provided to conclude the present program. Upon completion these projects will not only increase and stabilize earnings but will extend company's marketing area through additional outlets being acquired. The industry is going through a severe test and our policy is to complete these projects and to conserve our cash position that we may emerge from the depression in a strong position to produce, refine, transport and market with maximum efficiency and economy."

Lone Star Gas

Holders of Lone Star Gas Corp. common stock of record February 2 will receive a stock dividend at the rate of one share common stock for every seven common shares held. The committee on securities of the Pittsburgh Stock Exchange rules that common stock be not quoted ex-dividend on February 2, 1931, or until further notice.

Southern Pipe Line

Southern Pipe Line Co. reports for year ended December 31, 1930, net profit of $243,582 after charges, equal to $2.43 a share (par $10) on 100,000 shares of stock. This compares with $123,990, or $1.24 a share in 1929.

Southern Pipe Line Co. has declared a dividend of 50 cents on the capital stock payable March 2 to stock of record February 14.

Last previous dividend was $1 paid December 1, 1930.

Forrest M. Towl, president of Southern Pipe Line Co., stated that the plant account (less depreciation) was reduced $608,003 from the end of the previous year, resulting from sale of a system of pipes and other property not used by the company.

"From the proceeds of these two sales and other available resources," Mr. Towl said, "a distribution of $10 a share was made from the capital stock reduction account. This account was reduced $1,207,557. At the close of the preceding year there remained $48,970 in our custody due to the fact that certain stockholders had not returned their certificates, so that the new $10 par certificates could be issued and the several authorized distributions paid. This year's report shows $21,412 due such stockholders still in our custody.

"It does not seem probable that, in the near future, there will be funds available to justify a further distribution from the capital stock reduction account. The partial liquidation of the company has been completed.

"The transportation business of the company has been remarkably regular during the past year."

CURRENT OIL WELL CEMENTING PRACTICE

(Continued from Page 36)

handling, mixing and placing of cement which should be kept well in mind in any work using this material.

There are three distinct types of cement in use at present:

1. Common portland cement—The manufacturers of portland cement attempt to make their cement to conform with, or exceed, the specifications of the American Society for Testing Materials. This society is an impartial body and among its members are all of the manufacturers of portland cements. The object of these specifications for portland cement is to provide impartial standards of minimum limits of quality, and methods of determining these limits. They are based primarily on the needs of concrete construction. It is understood by both the concrete industries and the cement manufacturers that failure to meet these specifications is sufficient cause for rejection of the cement. There are no standard specifications, however, for cement as it applies to oil well usage, but such specifications will be considered a little later in the paper.

It may be said that portland cements, even though not covered by special specifications, have generally met the demands of oil well cementing up to date and though various brands differ slightly in some mechanical or physical properties, they have been generally uniform as to quality.

2. Special oil well cements, or special portland cement—These cements differ from common portland cement mostly in that they are ground finer, and in some cases burned longer than the common portland. It has been found that finer grinding gives quicker setting properties to the cement, and a higher strength. The advantage in their use is that they are more dense and impermeable, and can be drilled through sooner than common portland cement used without the use of an accelerator.

It is interesting to note that cement manufacturers have shown that it is possible to develop special cements to help overcome high temperature problems that may come in the oil industry. This effort has been brought about by the need for such a cement where extremely high well temperatures cause ordinary cements to attain their initial set too rapidly.

3. High alumina cements—These cements differ both in chemical composition from the common or special portland cements. The initial set of this type of cement is slow, which is favorable for oil well cementing. The 24-hour strength is very high, being about as great as that of portland cement at 28 days. Its cost, however, is considerably higher than that of portland cement. This type of cement is widely used in Europe where its price is not so high, due to availability of raw materials.

The conditions for cementing in Oklahoma and Kansas are much more favorable than in many other areas. The formations are hard and thin mud has been generally used, assuring a good bond between the cement and wall of hole. Also, no very high temperatures have yet been encountered. Consequently, operators in these two states have not had to give much extra thought to the quality or characteristics of the cement itself.

In other areas, such as the Gulf Coast, where conditions are not so favorable, considerable extra thought must be given to the quality of the cement. The Gulf Coast has a combination of high temperatures, high gas pressures, highly viscous muds, unconsolidated formations, tight holes, salt formations, etc. Under such conditions the cement must be of good quality and possess the necessary properties to start with which makes it quite natural to think of the specifications of the American Society for Testing Materials, as they apply to the increasing demands of oil well cementing.

Briefly, these A.S.T.M. specifications for portland cement are as follows:

1. Portland cement is the product obtained by finely pulverizing clinker produced by calcining to incipient fusion an intimate and properly proportioned mixture of argillaceous and calcareous materials, with no additions subsequent to calcination excepting water and calcined or uncalcined gypsum.

Chemical Properties

2. The following limits shall not be exceeded:

	Per cent
Loss on ignition	4.00
Insoluble residue	0.85
Sulphuric anhydride (SO_3)	2.00
Magnesia (MgO)	5.00

Physical Properties

3. The residue on a standard No. 200 sieve shall not exceed 22 per cent by weight.

4. A pat of neat cement shall remain firm and hard, and show no signs of distortion, cracking, checking or disintegration in the steam test for soundness.

5. The cement shall not develop initial set in less than 45 minutes when the Vicat needle is used or 60 minutes when the Gillmore needle is used. Final set shall be attained within 10 hours.

6. The average tensile strength in pounds per square inch of not less than three standard mortar briquets composed of one part of cement and three parts of standard sand, by weight, shall be equal to or higher than the following:

Storage of briquets—	Age at test days	Tensile strength lbs. per square inch
1 day in moist air, 6 days in water	7	225
1 day in moist air, 27 days in water	28	325

7. The average tensile strength of standard mortar at 28 days shall be higher than the strength at 7 days.

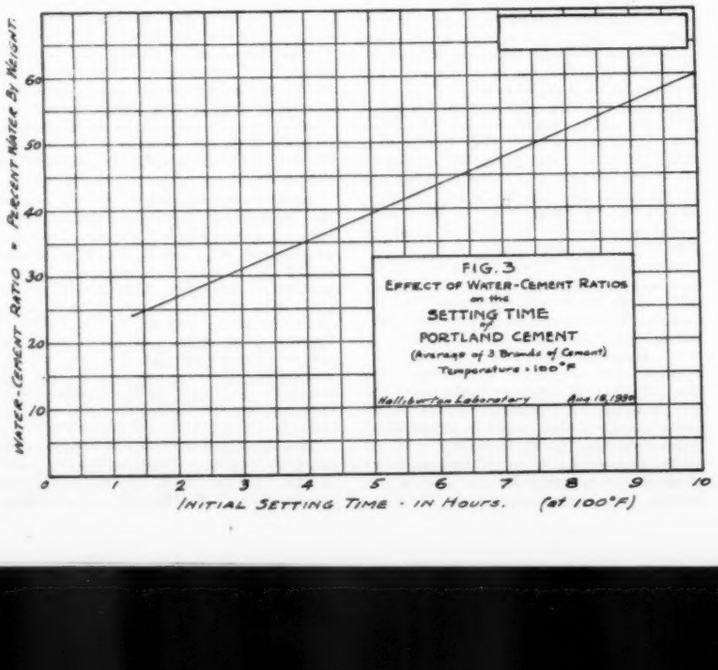
All of these specifications have been within reasonable expectancy for oil well cementing up until the present deep drilling and high temperatures began "pushing" the setting time factor. A cement could be made to conform to the setting time factor and yet be a long way from meeting the present setting time demands. However, it is in our favor that the cement manufacturers usually aim to exceed this specification.

The A.S.T.M. setting time tests are made on cement mixed to normal consistency, which is about 25 per cent water by weight added to the cement. This consistency is too thick for pouring or pumping; consequently, the addition of water to 40 per cent, desirable in oil well cementing, increases the setting time. Figure 3 shows this effect on the average of three brands of portland cement at 100° F.

For field data based on laboratory work carried out on cement within the oil industry it would be desirable to have setting time tests made on neat cement mixed at a water-cement ratio of 40 per cent water by weight and 70° F., instead of normal consistency at 70° F.

Present deep wells have already indicated that there is need for an intensive study of the fundamentals governing setting time and its various relations to high temperature, pressure, water-cement ratios and consistency. Aside from the setting time there are various cross relations between those factors, such as the effect of temperature on consistency, that have very practical significance. Figure 4 shows that as temperature is increased the water-cement ratio must be increased to get the same consistency or workability. On the other hand, this increased water will act to overcome the effect of temperature on setting time.

These factors are being thoroughly studied in the laboratory and the graphic figures accompanying this paper are mostly based on the performance of an individual cement. In due time these in-


WATER-CEMENT RATIO - PERCENT WATER BY WEIGHT
10
20
30
40
50
60
0 1 2 3 4 5 6 7 8 9 10
INITIAL SETTING TIME - IN HOURS. (at 100°F)
FIG. 3
EFFECT OF WATER-CEMENT RATIOS on the SETTING TIME of PORTLAND CEMENT
(Average of 3 Brands of Cement)
Temperature - 100°F
Halliburton Laboratory Aug 19, 1930

dividual curves will be extended into all the different types and brands of cement, to serve as a basis for determining reasonable expectancies and calculations under the various complicated well conditions as they may arise. The working up of such data, to be thorough, takes time and patience and, to be useful, it must be done in advance of the need, especially since the high cost of deep drilling makes it necessary that guess work be minimized to the limit.

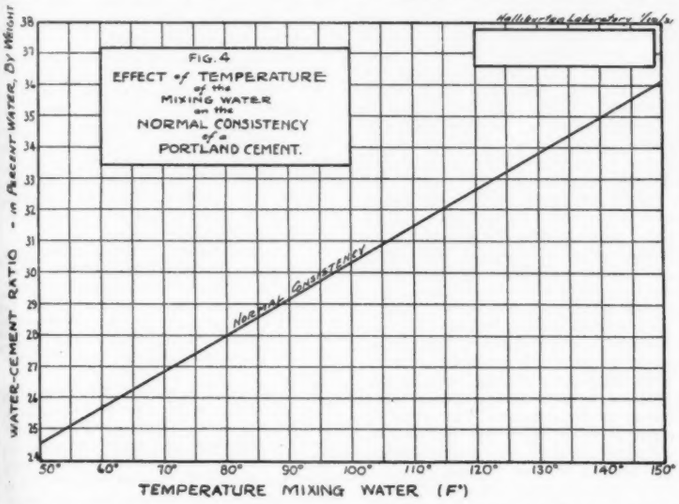

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FIG. 4
EFFECT of TEMPERATURE of the MIXING WATER on the NORMAL CONSISTENCY of a PORTLAND CEMENT.
WATER-CEMENT RATIO - in PERCENT WATER, By Weight
NORMAL CONSISTENCY
TEMPERATURE MIXING WATER (F°)

Cement will absorb moisture from the atmosphere and thereby reach a partial set within the package. Therefore, it is essential that cement shall be reasonably fresh from the cement plant, not from lumber yard, and that proper storage and handling has been observed between the cement plant and the place of ultimate consumption. It is inadvisable to haul cement to the well until it is needed, but should it be necessary to store cement at the well, which is often the case, due to bad roads, etc., adequate facilities should be provided for keeping the cement perfectly dry until used. All damp cement or cement containing hard lumps, should be discarded.

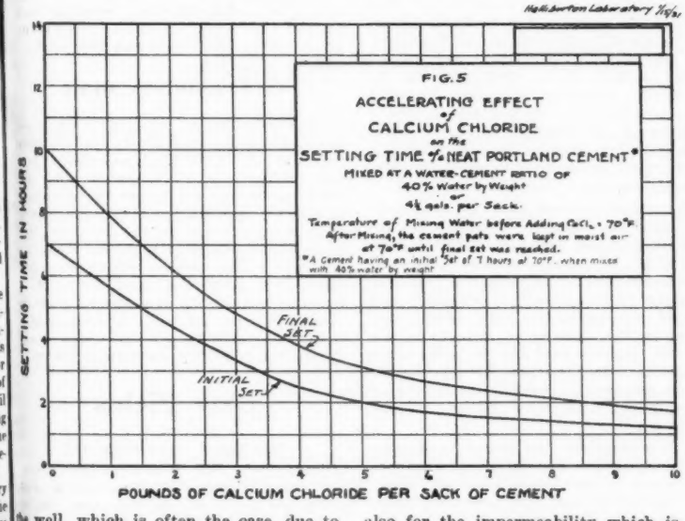
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FIG. 5
ACCELERATING EFFECT of CALCIUM CHLORIDE on the SETTING TIME of NEAT PORTLAND CEMENT*
MIXED AT A WATER-CEMENT RATIO OF 40% Water by Weight or 4½ gals. per Sack.
Temperature of Mixing Water before Adding CaCl2 = 70°F. After Mixing, the cement pats were kept in moist air at 70°F until final set was reached.
* A Cement having an initial Set of 1 hours at 70°F. when mixed with 40% water by weight
SETTING TIME IN HOURS
FINAL SET
INITIAL SET
POUNDS OF CALCIUM CHLORIDE PER SACK OF CEMENT

Use of Accelerators in Cement

Accelerators are used in cement in order to obtain high strength at an early stage, so that operations may be shut down for a minimum period of time while the cement hardens. In accomplishing this purpose the time of initial set is also reduced, the reduction being in proportion to the amount of accelerator used per unit of cement.

Figure 5 shows the effect of an accelerator on the setting time of a portland cement, where the temperature of the mixing water was 70° F. before the addition of the accelerator. When making use of such a curve, one should allow for temperature. Another use of such curves as Figures 3 and 4, is to show the comparative performance of different kinds of cement under the same conditions.

Variables Entering Into the Cementing of Oil Wells

The variables entering into the cementing of wells are so many that no attempt will be made here to cover all of those which can be thought of. There are a few, however, which are outstanding and most of which can be either actually controlled or provided for. They are as follows:

1. The dry cement—This has already been sufficiently covered in this paper.

2. Water-cement ratio—It may be stated that: "For given materials and conditions of manipulation, the strength of concrete is determined solely by the ratio of the volume of water to the volume of cement so long as the mixture is plastic and workable."

The above also holds for neat cement and is not only true for strength, but also for the impermeability which is so necessary for the exclusion of water, since the porosity of neat cement is determined by the uncombined water. The uncombined water either dries out or stays in the form of minute drops, leaving the cement honeycombed.

The usual physical tests on cement are made with mixes of normal consistency, which is about 25 per cent water by weight, or 2.8 gallons of water per sack. Since the usual cement slurry used in oil well cementing has a water-cement ratio of from 4.5 to 5 gallons it is evident that the characteristics of such a mix will vary considerably from the results obtained from mixes of normal consistency. Normal consistency also is too thick for construction work. It has been found that setting time is increased with increased water, and the strength decreased. It is generally conceded that a water-cement ratio of from 4.5 to 5.5 gallons per sack gives good workability and strength and is satisfactory for general oil well work.

3. Temperature and acceleration—Higher temperatures will decrease the setting time quite materially. Therein lies both an advantage and a disadvantage. Provided that the cement may be placed in a well before a sufficient temperature is reached to materially shorten the setting time, the addition of heat will give a higher early strength to the cement.

Figures 6 and 7 graphically show the effect of temperature on the setting time of a special cement. Figure 6 shows the effect on a normal consistency mixture, or 25.5 per cent water by weight, while Figure 7 shows it on a mixture of the cement with 40 per cent water by weight, or 4.5 gallons per sack. These are presented for comparison. A comparison also shows the effect of the increased water on setting time of this cement. It is interesting to note that all the curves converge around the boiling point of water.

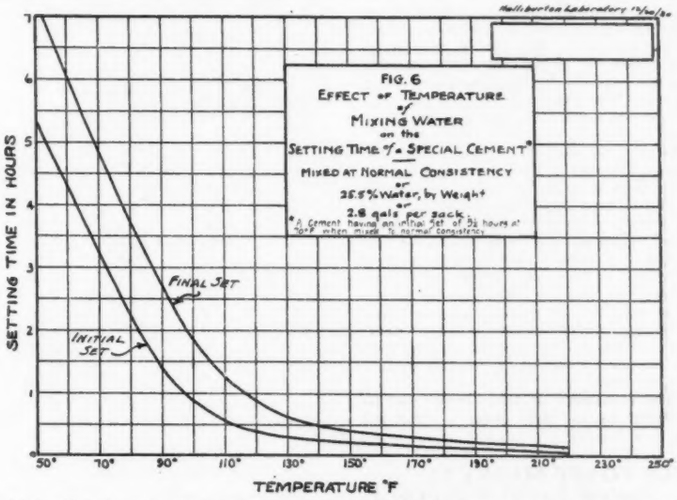
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FIG. 6
EFFECT of TEMPERATURE of MIXING WATER on the SETTING TIME of a SPECIAL CEMENT*
MIXED AT NORMAL CONSISTENCY or 25.5% Water, by Weight or 2.8 gals per sack
* A Cement having an initial Set of 3½ hours at 70°F when mixed to normal consistency
SETTING TIME IN HOURS
FINAL SET
INITIAL SET
TEMPERATURE °F

Temperatures of varying degrees may be transmitted to the cement slurry from several sources.

(a) Mixing water—The temperature of the mixing water at a well usually conforms to the atmospheric temperature. In the summer time this frequently runs as high as 110° F. in Oklahoma.

(b) Drilling mud—The temperatures of drilling mud will vary considerably in different localities. In most places it will conform to the air temperature in summer, and possibly around 60° to 70° during freezing weather. Exceptions to this are found in some of the deep wells in California, the Gulf Coast and other places where the well temperatures heat the mud considerably.

(c) Friction—Some heat will undoubtedly be generated in pumping the slurry down the hole, but the large volume of circulating fluid should be sufficient to dissipate practically all of this heat.

(d) Temperature of the hole—The temperature of the hole should, in the main, have a beneficial effect on the setting qualities of the cement after the mixture has been placed. The fact that the circulating fluid keeps the temperature down until the cement is in place, with the exception of some areas where the well temperatures run very high, makes the well temperature an ideal medium for obtaining an early hardness.

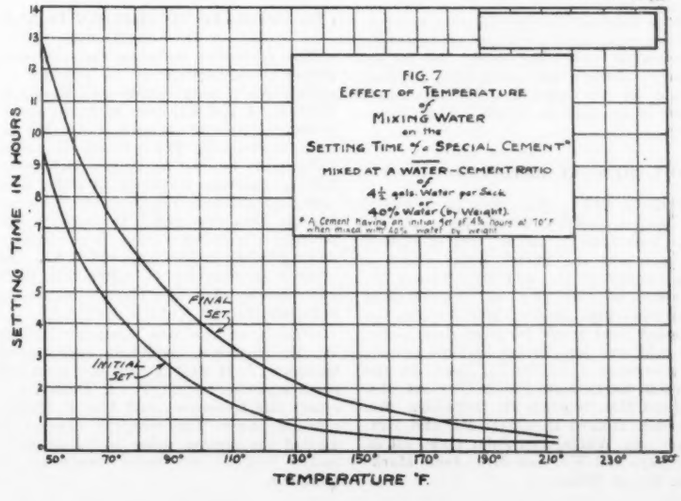
The highest well temperature already recorded in Oklahoma is 149° F. The deep wells at Oklahoma City average 107° F. with a maximum recorded as 110.6° F. Further data on well temperatures is included in Production Bulletin No. 205 of the American Petroleum Institute which presents the results of a study of earth temperatures, in various sections of the country.

4. Depth of well—The influence that depth has upon the cementing process is outside of temperature, the fact that it takes a longer period of time to place the cement in a deep well than it does in a shallow well. The amount of cement used in cementing casing in a deep well is usually greater than that used at shallower depths for obvious reasons. Also, the deeper the well the greater the hydrostatic pressure imposed on the cement.

Since the effect of pressure on cement cannot be observed in a well, such work must be carried out in the laboratory. This work has not proceeded to the point where reliable data is available.

The depth of the well will, due to the time required to place the cement, have an influence on the quantity of accelerator used and the fluidity of the slurry. Surface equipment will have to be in perfect condition, and no time must be lost in placing a large quantity of cement at great depths. It is not uncommon in the Oklahoma City Field to mix and place 1,500 sacks of cement at 5,500 feet in little over an hour, using two cementing outfits.

5. Agitation of the cement—Available data shows that agitation of cement past its normal initial setting time is expected


Halliburton Laboratory
FIG. 7
EFFECT of TEMPERATURE of MIXING WATER on the SETTING TIME of a SPECIAL CEMENT*
MIXED AT A WATER-CEMENT RATIO of 4½ gals. Water per Sack or 40% Water (by Weight).
* A Cement having an initial Set of 4½ hours at 70°F when mixed with 40% water by weight
SETTING TIME IN HOURS
FINAL SET
INITIAL SET
TEMPERATURE °F

to be detrimental to the strength of the cement. Should the agitation be continued beyond the time of final set, it is expected that the cement will not set at all.

Agitation of cement slurries may be divided into two parts:

(a) Agitation during placement—Agitation in this case, of course, cannot be avoided, but care must be exercised that the period of agitation be kept to a minimum.

(b) Agitation after placement—The agitating agents after placement may be oil, gas, or water, or any combination of the three. Therefore, it is essential, before making an attempt to cement to be sure that the well is completely "dead" and that hydrostatic equilibrium is maintained during the setting period.

6. Chemical influences — The most common chemical influence found in cementing work and which could be classed as detrimental is the action of sulphur compounds upon the cement. Sulphur acts to combine in the cement to form gypsum. The growth of the gypsum crystals acts to break down the cement structure.

So far, chemical research on the cement has only scratched the surface.

7. Methods of handling jobs—The method of handling different cement jobs is a variable factor which cannot be overlooked. The method used in mixing and placing the cement will largely control the kind of cement to be used, the amount, or absence of accelerator, the consistency of the mix, and the time which the cement should set before drilling is resumed. This factor will be further discussed under the different cementing jobs.

(The remainder of this article will be published in an early issue of The Oil and Gas Journal.)

GULF COAST MARKETS SHOW LITTLE CHANGE

HOUSTON, Tex., Jan. 26.—Gulf Coast refinery markets continued to mark time the past week. The better tone which developed in gasolines the preceding week remained the dominating factor although so far as actual prices were concerned there was little change. Sales were more or less routine as usual. The slightly higher prices in North Texas were reflected in contract material moving out of coastal refineries but spot material was only steady.

Fuel oils were held at a minimum of 65 cents for cargo sales despite the lack of new demand. However, these oils apparently are in fair shape so far as stocks are concerned. Regular channels of outlet for the major sellers continued virtually the only business. A few scattered orders for barge lots or smaller quantities comprise the chief spot market which generally is quoted around 80 to 90 cents. Bunkering oil is firm at 90 cents.

Gas oil is being sold at a nominal figure of 3⅛ to 3¼ cents. This product is fairly inactive at this time but the market still is in fair shape following the recent flurry in buying when a considerable quantity of this product was bought up.

Pale and red oils are slow at the prevailing quotations although no important concessions are being made, so far as known. Sellers are attempting to hold firmly at the market, and apparently there is no definite trends, either up or down.

OIL MEN AT BIRD DOG MEET

PONCA CITY, Okla., Jan. 26.—Walter C. Teagle, president of the Standard Oil Co. (New Jersey), and a party of eastern oil men are the guests with others of this locality of Mr. and Mrs. Ernest W. Marland of this city on the Marland plantation near Macon, Miss., where the national field trials for bird dogs is being held and Mr. Teagle and his friends have entered a number of dogs. In the Marland party from Ponca City are also Mr. and Mrs. William H. McFadden, Mr. and Mrs. Dillard H. Clark, Mr. and Mrs. Eugene L. Waldo, and John Hale, all of this city, and Mr. and Mrs. John Markham, Jr., of Tulsa.

DISTILLATION TESTS OF EAST TEXAS CRUDE

Much interest has been attracted to the development of the Rusk County production in East Texas because the location of the field promises new supplies of crude to refiners in North Louisiana and could also be moved south to the Gulf if production reaches a large figure. More than 70 wells are being drilled in this area, the production thus far coming from a relatively few wells located in three pools. Tests on the oil being taken from two of these are included below, the laboratory tests indicating gasoline yields of better than the average crude may be realized.

CRUDE OIL TESTS, HENDERSON, RUSK COUNTY, TEXAS

Gravity	39.2
Flash	Atmosphere
Fire	Atmosphere
Basic sediment and water	2.0%
Pour test	25° F.
Sulphur	0.235%

1,000 cc. Hempel Distillation

I. B. P.	118° F.
9 per cent	221° F.
10 per cent	238° F.
17 per cent	284° F.
20 per cent	314° F.
30 per cent	388° F.
32 per cent	392° F.
33 per cent	410° F.
34 per cent	460° F.
48 per cent	550° F.

Tests on Products

	Gasoline	Kerosene
Percentage	33.0%	15.0%
Gravity	58.5	40.2
I.B.P.	122° F.	373° F.
20% over at	200	424
50% over at	258	454
90% over at	368	525
Endpoint	420	585
Color	30	25
Sulphur	0.008%	0.008%
Flash		170° F.

	Gas oil	Bottoms
Percentage	29.5%	20.0%, loss 2.5%
Gravity	30.6	...
Sulphur	0.23%	0.736%
Flash	285° F.	500° F.
Pour test	75° F.	110° F.
S. U. Vis. @ 100...	86	148 Float @ 122

Summary of Yields

	Per cent
Gasoline	33.0
Kerosene	15.0
Gas oil	29.5
Bottoms	20.0
Loss	2.5
Total	100.0

CRUDE OIL TESTS
Kilgore, Rusk County, Texas

Gravity	36.4
Flash	Room temp.
Fire	Room temp.
Vis. (Saybolt @ 100°F.	41 seconds
Sulphur	.24%
Color	Dark green
Pour	20°F.
B.s.&w.	.2%
Odor	Sweet

Distillation—	Temp.	Gravity	Pour
Initial B.P.	116°F.		
10% off at	240°F.	70.3	0°F.
20%	295°F.	57.8	0
30%	374°F.	50.8	0
40%	458°F.	44.0	0
50%	542°F.	38.7	0
60%	640°F.	35.0	35°
70%	696°F.	31.8	80°

Cracked at 714° F.—About 80% over.

ESTIMATED YIELDS

Gasoline	36.0%
Kerosene	10.0
Gas oil	16.0
Wax distillate	23.0
Bottoms	12.0
Loss	3.0

TO OPERATE MUSKEGON PLANT

The Naph-Sol Refining Co. will complete the remodeling of its recently acquired plant near Muskegon, Mich., by February 1 and will then begin the manufacture of special solvents and other petroleum products. The refinery was originally built by the Muskegon Refineries, Inc., at the time the local oil fields were under intensive development but the plant has not been operated. The property was recently purchased by the new company and additions were made which have increased its capacity to 1,500 bbls. daily and permits the manufacture of special naphthas.

Officers of the new company include W. E. Anderson, president and general manager; J. H. Helms, vice president and plant superintendent; W. A. Penny, secretary and treasurer; and Alex V. Smith, sales manager. The company expects to market the greater share of its products locally and in the lower peninsula of Michigan.

CALIFORNIA MARKETS QUOTE BETTER PRICES

LOS ANGELES, Calif., Jan. 26.—Both tank wagon and retail prices of gasoline were higher in southern California territory during the past week. Retail quotations of cut-rate gasoline increased from 2 to 3 cents bringing the prevailing price up from 12½ cents to 14½ and 15½ cents. These quotations include the regular state gasoline tax of 3 cents. Major companies did not make any change in retail quotations and are still maintaining the 20½ cents which they posted last year. Regular customers and special accounts, however, are able to purchase gasoline of major refiners at from 2 to 3 cents under the posted price.

The Rio Grande Oil Co. started the ball rolling last week by announcing an increase in the price of gasoline from 10½ to 12½ cents to the truck and trailer trade. This class of business is confined almost entirely to jobbers and independent service station operators who have been very active in price cutting during the past several weeks. The Rio Grande has been obliged to absorb a substantial quantity of crude oil production during the past 60 days and has consequently been obliged to increase its refinery runs to cope with the situation. This resulted in a piling up of heavy gasoline stocks. In order to alleviate this condition Rio Grande decided to meet competitive conditions in the wholesale market and subsequently engaged in a new class of business consisting of selling gasoline to jobbers and dealers into their trucks and trailers. The Wilshire Oil Co. and several other independent refiners increased current quotations simultaneously with the advance posted by the Rio Grande in tank wagon prices.

CROMWELL SAYS HURLEY FAVORS IMPORT LIMIT

WASHINGTON, D. C., Jan. 27.—After an interview with Secretary of War Patrick J. Hurley, Joe I. Cromwell of Oklahoma City director of the Independent Petroleum Association, and an official delegate from Oklahoma to the governors' oil relief conference, issued a statement that Mr. Hurley, who is also a member of the Federal Oil Conservation Board, favors co-operative control of domestic production of oil to equal the consumptive demand. Mr. Cromwell said:

"In order to send back to their jobs the enormous number of men who are now unemployed because of the depression of the oil industry caused by the excessive imports of foreign oil, and also to assist in the orderly development and control our production, Mr. Hurley believes in the limiting of imports of oil and its refined products in some such manner as that provided by the Capper bill to protect and stabilize the American oil industry and thus restore normal prosperity."

It is understood that Secretary Hurley favors giving the Federal Trade Commission power to limit importation. He thinks that as we prorate our own production we should limit importation.

The form of Capper bill as now approved does not prorate importation based on amounts received from foreign countries exporting oil to this country in 1928. That has been abandoned as too complicated and apt to raise a question of discrimination. It proposes simply to limit importation to 16,000,000 bbls. annually.

NEW KENTUCKY REFINERY

HORSE CAVE, Ky., Jan. 26.—The Simrall Refining Corp. will build a 500 to 1,000-bbl. refinery here immediately, preliminary construction work having been started in the past week. Local crude will be run in the plant and the products will be distributed locally. A pipe line has been laid from the Horse Cave Pool to the refinery and sufficient capacity has been added to the line to enable the Simrall Refining Corp. to load crude in tank cars at the plant for distribution to other refiners.

BIRD CREEK PRODUCERS SEEKING CRUDE MARKET

Operators in the old Bird Creek Field of northern Tulsa and southeastern Osage County met on Monday in Tulsa to discuss the problem of finding a market for their oil. They had been selling oil to the Prairie Oil & Gas Co., and when that company withdrew as a purchaser they were without a market.

A committee was appointed the duty of which will be endeavor to find a market for the oil produced in the area. The committee consists of Vern Vensel of Elliott & Vensel, E. B. Lawson of the Lawson Petroleum Co., J. B. Steele of the Kewanee Oil & Gas Co., W. T. Henry of the Henry Oil Co., and Bruce Martin. Martin will also look after the interests of operators without pipe line connections in other Tulsa County pools.

It was announced at the meeting that operators in Washington, Nowata, Rogers, eastern Osage and Waggoner Counties are making an organized effort to find purchasers for the oil the Prairie Oil & Gas Co. had formerly purchased, and for which no customer has yet been found.

A resolution endorsing the proration plans worked out by the Mid-Continent Oil and Gas Association, and put onto effect by orders of the State Corporation Commission was adopted. The resolution asked Governor Murray to recommend a continuance of curtailment of Oklahoma production.

E. B. Lawson reported that the Standolind Crude Oil Purchasing Co. would take up to 1,500 bbls. of distress production per day in the Nowata-Chelsea area.

It was stated at the meeting that 6,219 bbls. per day of northeastern Oklahoma crude oil had been cut off from a market on January 1. This oil was produced on 1,445 leases. The number of leases and the daily production was as given as follows: Tulsa County, 208 leases and 1,114 bbls.; Osage County, 213 leases and 1,966 bbls.; Rogers County, 202 leases and 1,026 bbls.; Nowata County, 336 leases and 1,182 bbls.; Washington County, 396 leases and 931 bbls.

INDEPENDENTS MEET

BOSTON, Mass., Jan. 22.—The seventh annual meeting of the Independent Oil Men of New England closed here today after a two-day session and was attended by 150 marketers of petroleum products. An exhibit of station equipment was included in the program and attracted considerable attention from the members. The code of ethics was presented for discussion and Edmund J. Brandon asked that the present code be "Recast" since, he said, it contained a mass of contradictory provisions and worked an inequality among marketers.

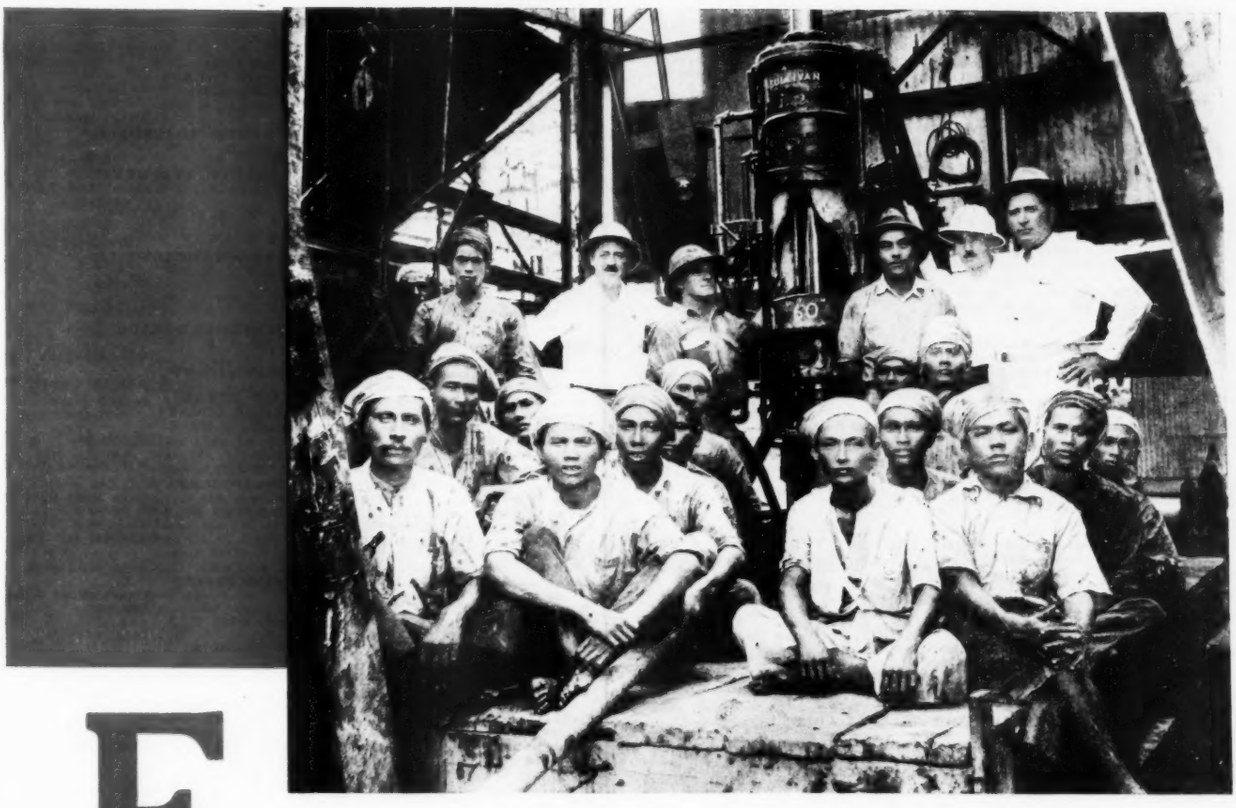
Late Fields

(Continued from Page 44)

3,369-80 feet. The Shell Petroleum Corp. gave the United Petroleum Corp. and others 10 acres in the SW cor. SE of that section to drill a well.

Another well in the Ritz Pool area in McPherson County found oil in the chat formation. E. K. Carey and Shell Petroleum Corp.'s No. 1, C NE SW, Section 15-19-2w, was flowing at the rate of 20 bbls. an hour from the chat at 2,928-70 feet. The gas is estimated at 4,500,000 feet a day. The nearest oil well to the test is Shell Petroleum Corp.'s No. 1 Robinson, C SE, Section 10-19-2w, and the nearest gas well is the same operator's No. 1, C NE NE, Section 15-19-2w.

Phillips Petroleum Co. and others' No. 1 Cone, NW cor. NE, Section 31-22-3w, Harvey County, found oil in the chat. The top of the chat was found at 3,220 feet and at 3,275-80 feet oil rose 1,200 feet in the hole. It was drilled deeper to 3,283 feet where the oil increased to the top of the hole. The total depth is 3,297 feet, and a production test will be made. The test is located about 1½ miles from gas production, and 9 miles south of the Voshell Pool, in McPherson County.



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SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 52)

PETTUS AREA—BEE COUNTY

Batex Petroleum Co.'s No. 3 Burnett, 360 ft. from N line, 600 ft. from E line of 320-ac. tract, Kerr Sur. ..... Dropped from report.
J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur. ..... T. D. 3,734 ft.; shut down for fuel.
Houston Oil Co.'s No. 1, Blk. 23 ..... T. D. 3,911 ft.; to be deepened.
Houston Oil Co.'s No. 1, Blk. 33 ..... T. D. 3,914 ft.; to be deepened.
Union Producing Co.'s No. 26 Ray, 3,500 ft. from S line, 2,000 ft. from E line, P. Miller Sur. ..... T. D. 3,951 ft.; swabbing.

AGUA DULCE FIELD—NUECES COUNTY

South Texas Production Co.'s No. 9 Walter, 800 ft. from S line, 460 ft. from E line of Walters tract in Sec. 34 ..... T. D. 1,984 ft.; standing.
Houston Oil Co.'s No. 1-B Ollie Purl ..... Spudded.
Houston Oil Co.'s No. 1 Comstock, Sec. 86, Benton Pasture Sur. ..... T. D. 4,913 ft.; shut in for pipe line.

SAXET FIELD—NUECES COUNTY

O. C. Best et al's No. 1 Boory ..... Derrick.
Houston Oil Co.'s No. 1 Joe Hunter, Sec. 591 ..... T. D. 4,079 ft.; comp. for 200 bbls.
Houston Oil Co.'s (Andy Bowen) No. 1 Prieur, H. B. Sheppard Sur. ..... T. D. 1,465 ft.; waiting for csg.
Moody-Seagraves Producing Co.'s No. 1 Smith, 450 ft. from N and E line of 120-ac. tract, J. Dunn Sur. .... T. D. 4,560 ft.; drlg.
W. L. Pearson Properties' No. 1 Dunn, 300 ft. S of Bay ..... Shut down 2,600 ft.
Pearson Properties, Inc.'s No. 1 State National Bank .... Shut down 2,470 ft.
Saxet Oil Co.'s No. 7 Dunn ..... Abandoned.

LAREDO DISTRICT

SCHOOLFIELD-O'BYRNE POOL—DUVAL COUNTY

Frasher et al's No. 2 Duval Land Co., G.B.&C.N.G. Sur. No. 135 ..... Spudded.

RANDADO POOL—JIM HOGG COUNTY

J. W. Pippin's No. 1 Hinnant, 150 ft. each way from SW cor., Blk. 11, Sur. 147 ..... Derrick.

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,905 ft. from S line, 165 ft. from W line of Sur. 164 ..... T. D. 2,955 ft.; drlg.

COLE POOL—DUVAL COUNTY

Southern Oil Co.'s No. 2 King-Harper, 1,794 ft. E line, 729 ft. N line of Sur. 323 ..... Location.

COLE POOL—WEBB COUNTY

O. W. Killam's No. 2 Cuellar, Cuellar grant ..... T. D. 2,352 ft.; waiting on cement.
Magnolia Petroleum Co.'s No. 1 Peal, Share 3, Cuellar grant ..... T. D. 2,654 ft.; drlg.

REISER POOL—WEBB COUNTY

O. W. Killam's No. 1 Johnson, Sur. 1,617 ..... Location.

CAROLINA-TEXAS POOL—WEBB COUNTY

George S. Marshall's No. 1 C. W. Webster, 810 ft. from S line, 150 ft. from W line, Sur. 684 ..... T. D. 3,300 ft.; plugging back to 3,078 ft.

CHARCO REDONDO POOL—ZAPATA COUNTY

Midwest Public Utilities' No. 1 Garza, 450 ft. SW line, 450 ft. SE line, Blk. 33, Pedernal grant ..... T. D. 1,562 ft.; standing.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

Allied Oil & Gas Co.'s No. 12 Guiterrez, 750 ft. from NE line, 3,663 ft. from SE line, Share 4, Fansler Partition, Comitas grant ..... T. D. 100 ft.; standing.
Claypool and Nixon's No. 1 Garza, Blk. 11, Subdivision Zorro Ranch, Comitas grant ..... T. D. 1,402 ft.; testing.
Nordan and Morris' No. 3 de los Santos, Comitas grant .. T. D. 1,347 ft.; testing.
S. T. Phelps' (Blankenship) No. 2 Garza, 425 ft. W line, 425 ft. E line, Blk. 2, Sur. 413 ..... T. D. 1,630 ft.; standing.
Shankle-Newton's No. 8 Guiterrez, 4,525 ft. SE line, 150 ft. SW line, Share 4, Comitas grant ..... Location.
W. R. Shankle's No. 7 Guiterrez, 2,100 ft. from NE line, 2,898 ft. from NW line, Share 4, Fansler Partition, Comitas grant ..... Location.
S. R. C. Oil Co.'s No. 1 Cuellar, 150 ft. S and W lines, Blk. 16, Sur. 62 ..... Location.
S. R. C. Oil Co.'s No. 2 F. Cuellar, 300 ft. from S line, 300 ft. from E line, Blk. 8, Sur. 19 ..... T. D. 1,677 ft.; blowout.
J. H. Winch's No. 3 A. Bustamente, 750 ft. NW line, 150 ft. NE line, Blk. 7, Share 5, Fansler Partition, Comitas grant ..... T. D. 1,430 ft.; bailing.

JENNINGS-CUELLAR POOL—ZAPATA COUNTY

O. W. Killam's No. 38-B Cuellar, Sur. 277 ..... T. D. 1,583 ft.; comp. for 100 bbls.
O. W. Killam's No. 39-C Cuellar, Sur. 278 ..... T. D. 1,580 ft.; comp. for 20 bbls.

MIRANDO VALLEY POOL—ZAPATA COUNTY

O. W. Killam's No. 2 Killam, Sur. 182 ..... T. D. 1,325 ft.; bailing.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 50)

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 ..... Location.

RICHLAND PARISH

La. G. & F. Co.'s No. 1 Binion, 813 ft. E, 496 ft. N, SW cor. NW, Sec. 2-16-6 ..... Cmtd. 6-in. 2,300 ft.
United (was Southern) Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,551 ft. E, SW cor., Sec. 15-16-6 ..... Location.
Southern Carbon Co.'s No. 1 Hixson, 660 ft. N, 760 ft. W, SE cor., Sec. 33-16-6 ..... Cmtd. 6-in. 2,285 ft.
Southern Carbon Co.'s No. 2-B M. & M. McCoy (was No. 1-D), 1,980 ft. S, 660 ft. W, NE cor., Sec. 30-16-6 .. Cmtd. 6-in. 2,285 ft.
Southern Carbon Co.'s No. 7 F. B. and E. A. Sartor, 2,540 ft. S, 660 ft. E, NW cor., Sec. 17-16-7 ..... Drlg. 1,990 ft.
State Line O. & G. Co.'s No. 1 Noble-Morris, 917 ft. N, 389 ft. W, SE cor. SE SW, Sec. 35-16-5 ..... Drlg. 2,050 ft.
United Carbon Co.'s No. 1 Lindow, 1,980 ft. S, 37 ft. E, NW cor., Sec. 15-16-6 ..... Rig up.

SABINE PARISH—ZWOLLE

W. M. Coates' No. 2 Sabine Lbr. Co., 330 ft. S, 330 ft. E, NW cor., NW SW, Sec. 1-7-12 ..... Location.
W. M. Coates' No. 2-B Sabine Lbr. Co., 330 ft. W, 785 ft. N, SE cor. SW SW, Sec. 1-7-12 ..... Location.
Davis & Tyson's No. 1 Neville & Roberts ..... Flowed 75 bbls. 2,187 ft., arranging to shoot 2,400 ft.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor., SE NW, Sec. 30-8-12 ..... Rig up.
R. L. Gay's No. 2-A Sabine Lbr. Co., 330 ft. N, 330 ft. E, SW cor. NE NW, Sec. 1-7-12 ..... Cmtd. 6⅝-in. 2,368 ft.
F. M. Hood's No. 1-B Winston (was No. 2), 700 ft. E, 425 ft. S, NW cor., Sec. 31-8-12, Zwolle Townsite .... S.D. 1,065 ft.
Ab Jones et al's No. 1 Ferguson, 330 ft. N, 330 ft. W, SE cor. NE SW, Sec. 33-8-12 ..... S.D; waiting for 6⅝-in; T.D. 2,380 ft.
Loring Oil Co.'s No. 14 Bowman-Hicks Lbr. Co., SE cor., SW SE, Sec. 33-8-12 ..... Top chalk 2,481 ft; W.O.S.R. 600 ft in oil; T.D. 2,495 ft.
Loring Oil Co.'s No. 15 Bowman-Hicks Lbr. Co., NE cor. NW SE, Sec. 2-7-12 ..... Cmtd. 6⅝-in. 2,236 ft; T.D. 2,448 ft.
Ohio Oil Co.'s No. 1 Brown, 330 ft. N, 330 ft. W, SE cor. SW SW, Sec. 35-8-13 ..... Cmtd. 6⅝-in. 2,385 ft.
Ohio Oil Co.'s No. 6 Bowman-Hicks, 300 ft. N, 265 ft. W, C, Sec. 2-7-12 ..... Rig up.
Pelican Nat. Gas Co.'s No. 8 La. Long Leaf Lbr. Co., 384 ft. N, 330 ft. E, SW cor. NW SW, Sec. 4-7-11 .... Began drlg. Jan. 21; drlg.
H. W. Perritt's No. 2 Bowman-Hicks, NW cor. SE NE, Sec. 2-7-12 ..... Drlg. 2,020 ft.
H. W. Perritt's No. 3 Bowman-Hicks, 244 ft. S, 122 ft. E, NW cor. SE SW, Sec. 2-7-12 ..... Began drlg. Jan. 14; cmtd. 10-in. 96 ft.
J. M. Tompkins' No. 1 M. R. Stoker, 300 ft. S, 100 ft. W, NE cor. SW, Sec. 10-7-11 ..... Drlg. 900 ft.
J. C. Walton's No. 1 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor. NW, Sec. 11-7-12 ..... Began drlg. Jan. 16; cmtd. 10-in. 102 ft.

WEBSTER PARISH—SAREPTA

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 29-23-10 ..... Rig up.

ARKANSAS

JOHNSON COUNTY

(Cable tools)

Ark.-La. P. L. Co.'s No. 1 Hudson et al, 660 ft. N, 545 ft. E, SW cor. SE NE, Sec. 14-10-24 ..... Drlg. hard sand 3,002 ft.

OUACHITA COUNTY—SMACKOVER

L. H. Hamilton's No. 3 Doyle, 100 ft. E, 400 ft. N, SW cor. SE SE, Sec. 23-15-16 ..... T.A. 2,020 ft.

OUACHITA COUNTY—STEPHENS

J. D. Reynolds' No. 1 Pace, Lot 28, Sec. 21-15-19 ..... Cmtd. 6-in. 2,149 ft; cored oil sand 2,152-58 ft.
Wesson & Bonner's No. 1 Wesson, 500 ft. W, 175 ft. N, SE cor. SW NW, Sec. 22-15-19 ..... 300 ft. fluid; W.O.S.R; 2,169 ft. (reported 2,800 ft. in error).

UNION COUNTY—CHAMPAGNOLLE

Ohio Oil Co.'s No. 2 Raulston, 330 ft. S, 330 ft. E, NW cor. NW SE, Sec. 12-17-14 ..... Derrick.
Ohio Oil Co.'s No. 5 R. Pumphrey, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 12-17-14 ..... Location.

UNION COUNTY—EL DORADO

Rice Drlg. Co.'s No. 1 Watley, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... S.D; repairing rig; T.D. 1,520 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... S.D; title work; T.D. 215 ft.

EAST TEXAS

HARRISON COUNTY

Calatex O. & G. Co.'s No. 6 Argus, 755 ft. N, 689 ft. W, Mile Post 27, in J. Womack Sur. ..... Location.
Shell Rock Pet. Co.'s No. 1 Oliver Dougherty, W. D. Burris Sur. ..... S.D; fishing D.S. 3,568 ft.

PANOLA COUNTY

Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. .... Drlg. 1,300 ft.
Dillon & Bradham's (was W. G. Banks et al's), No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac. in Hampton West Sur. ..... S.D. 400 ft.
S. E. Bell et al's No. 1 Burnett Lbr. Co., C. S. B. Hendricks Sur. ..... Drlg. sand rock 3,086 ft.
Creighton & Hart's No. 1 Greeny-Kyle, C, Greeny-Kyle 60 ac., Jas. Tippett Sur. ..... Gas blowout 3,704 ft; S.D.
C. D. Neff et al's No. 6 Brumble, B. C. Jordan Sur. ..... Derrick.
Nat. Gas Prod. Co.'s No. 1 H. H. Alvord, 6,777 ft. S, 6,162 ft. E, NW cor., B. C. Jordan Sur. ..... Drlg. 4,180 ft.

MISSISSIPPI

HINDS COUNTY

Feazel O. & G. Co.'s No. 1 Garrett, SE cor. NW, Sec. 2-5-1e ..... Sidetracking rotary slip; T.D. 3,075 ft.
Cleve Love et al's No. 2 Ridgeway-McGhee, SE cor. NW, Sec. 2-5-1e ..... Rigging up.
Love Pet. Co.'s No. 1 Homestead, SE NW, Sec. 34-6-1e .... Drlg. shale 2,160 ft.
Miss. Pet. Co.'s No. 2 Baptist Orphanage, 210 ft. N, 210 ft. W, SE cor. NE SE, Sec. 28-6-1e ..... Rig up.

RANKIN COUNTY

Gulf Ref. Co.'s No. 1 Hamilton, 1,320 ft. N, 1,320 ft. E, SW cor., Sec. 12-5-1e ..... Coring black lime 4,025 ft.
Miss. G. & F. Co.'s No. 1 Hanna, SW cor. SW NE, Sec. 14-5-1e ..... Derrick.
Pioneer O. & G. Co.'s No. 1 Ragland, NE cor. SW SW, Sec. 12-5-1e ..... Derrick.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 50)

LA SALLE PARISH

La. G. & F. Co.'s No. 2-B Tensas, 1,980 ft. W, 1,321 ft. S, NE cor., Sec. 23-7-4 ..... Drlg. 3,032 ft.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10 ..... S.D. 3,718 ft.
J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10 .. Drlg. 2,800 ft.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10 .. S.D; waiting for D.S; T.D. 1,515 ft.
Gulf Ref. Co.'s No. 1 Bodcaw, 1,910 ft. S, 605 ft. W, NE cor., Sec. 13-13-8 ..... Cored hard blue shale 3,114 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10 ..... S.D. 500 ft.

RED RIVER PARISH

Lucky Strike Oil Co.'s No. 1 Chaffraix, 200 ft. S, 200 ft. E, C, Sec. 32-12-10 ..... D.S. test 2,820-3,010 ft; S.W. and show oil; arranging to plug back.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.
La. G. & F. Co.'s No. 1 Glanton, 262 ft. E, 618 ft. N, SW cor. NW SE, Sec. 33-17-6 ..... Tested dry 2,400 ft; cored lime 520 ft; drlg. 2,654 ft.
Palmer Corp.'s No. 2 Seubert, 660 ft. N, 660 ft. W, SE cor. SE NW, Sec. 35-17-5 ..... Location.

SABINE PARISH

Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11 ... Began drlg. Nov. 20; cmtd. 10-in. 105 ft.
Tom David's No. 1 Smith, 460 ft. N, 200 ft. W, SE cor. SE SE, Sec. 27-8-10 ..... S.D. 2,700 ft; small show gas.
Franks et al's No. 1 Dew, 200 ft. N, 300 ft. E, SW cor. SE, Sec. 22-8-11 ..... Cmtng. 6-in. 2,211 ft.
R. L. Gay, tr.'s No. 1-A Sabine Lbr. Co., 212 ft. S, 170 ft. E, NW cor. SE NW, Sec. 1-7-12 ..... 6-in. stuck 2,200 ft; cmtd. 4½-in. 2,290 ft; arranging test 2,690 ft.
Lacy Jessup Oil Co.'s No. 1 Brown Lbr. Co. (was Lacey et al's), C NW NE, Sec. 28-8-10 ..... S.D. 3,160 ft.
Lacey Prod. Co.'s No. 1 Cooper, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 30-8-11 ..... W.O.S.R; 1,200 ft. oil; T.D. 2,620 ft.
Lawrence et al's No. 1 Hubley, 330 ft. N, 330 ft. W, SE cor. NE, Sec. 21-7-11 ..... S.D. 2,650 ft.
Lide et al's No. 1 Ponder, 990 ft. N, 990 ft. W, C, Sec. 15-7-11 ..... Top marl 2,395 ft; cmtd. 6-in. 385 ft; T.D. 2,407 ft; tested dry 2,412 ft; 100 ft. oil in hole from 2,422 ft; D.S. test dry; show oil and gas 2,809 ft; W.O.S.R.
Lide et al's No. 2 Ponder, 200 ft. S, 200 ft. E, NW cor. NE NW, Sec. 15-7-11 ..... Rig up.
Longoria et al's No. 1 Belton, 330 ft. S, 330 ft. E, C, NE, Sec. 31-9-12 ..... Rig up.
Lyons & Neely's No. 1 Sabine Lbr. Co., NW cor. NE NE, Sec. 12-7-12 ..... Drlg. 1,600 ft.
Magnolia Pet. Co.'s No. 1 R. J. Lucius, 990 ft. S, 990 ft. W, NE cor. NW NE, Sec. 2-5-12 ..... Drlg. S.W. sand 2,602 ft.
McDaniel & Lieber's No. 2 Batson, 480 ft. S, 220 ft. E, NW cor. SW SE, Sec. 16-8-12 ..... D.S. test show oil; waiting for in. tubing to test; T.D. 2,625 ft.
Frank Melat, Inc.'s No. 1 Sabine Lbr. Co., 330 ft. N, 330 ft. E, SW cor. SW, Sec. 6-7-11 ..... Drlg. 1,900 ft.

Frank Melat, Inc.'s No. 2 Sabine Lbr. Co., 330 ft. S, 330 ft. W, NE cor. NE NW, Sec. 14-7-12 .. .... Tested dry 2,500 ft; show gas 2,560 ft; S.D. 2,560 ft.

Merritt et al's No. 1 La. Long Leaf Lbr. Co., S½ NE NE, Sec. 33-8-11 .... Dry 2,500 ft; W.O.

P. & G. Oil Co.'s No. 1 Williams, 330 ft. S, 330 ft. W, NE cor. SE NW, Sec. 21-7-12 .... Rig up.

W. P. Pearce et al's No. 1 G. Pearce, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 10-7-11 .... W.O; 150 ft. oil in hole; T.D. 2,600 ft.

Pelican Nat. Gas Co.'s No. 7 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor., Sec. 11-7-12 .... 2,000 ft. oil in hole; W.O.S.R. 2,399 ft.

D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE, Sec. 18-9-12 .... Made 30-ft. hole 3,280-3,310 ft; shut down.

T. G. Shaw et al's No. 1 Sabine Lbr. Co., 150 ft. N, 150 ft. E, SW cor., Sec. 1-7-12 .... Tested dry 2,477 ft; drlg. 2,683 ft.

Trans-America Oil Corp.'s (was Southland Oil Co.'s), No. 1 Carter, 1,030 ft. W. 345 ft. N, SE cor. SE NE, Sec. 36-8-12 .... W.O; 60 ft. oil in hole; T.D. 2,515 ft.

A. H. Tarver, tr.'s No. 1 Baker, 330 ft. S, 330 ft. E, NW cor. NE, Sec. 36-8-12 .... Reaming to bottom; T.D. 4,000 ft.

The Texas Co.'s No. 2 Stille, 910 ft. W, 320 ft. S, NE cor. NW, Sec. 3-7-11 .... Dry 2,475 ft; arranging to deepen.

Triangle Pet. Co.'s No. 1 Sabine Lbr. Co. (was R. B. Whittle's), 330 ft. N, 330 ft. E. SW cor. SE SW, Sec. 36-8-12 .... Sidetracking junk; T.D. 2,274 ft.

Wilson & Son's No. 1 Gandy-Garrett, NW SW, Sec. 4-5-12 (portable rig) .... Drlg. 2,240 ft.

John Woodley's No. 1 Sabine Lbr. Co., 400 ft. S, 330 ft. W, NE cor. SE, Sec. 12-8-12 .... Began drlg. Dec. 16; cmtd. 10-in. 103 ft.

TENSAS PARISH

Seip et al's No. 1 Fowler, C SW NE, Sec. 10-10-10 .... S.D. 905 ft.

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 .... Reamed to bottom; S.D. 2,780 ft.

UNION PARISH

Ouachita Nat. G. & O. Co., Inc.'s No. 1 Smith, 660 ft. S, 1,224 ft. W, NE cor., Sec. 36-20-2 .... Drlg. 1,850 ft.

WEBSTER PARISH

Coyle, tr.'s No. 1 Frazer, 200 ft. N, 200 ft. E, SW cor. NE SE, Sec. 27-23-11 .... Derrick.

Gehrig's (was Girard Oil Co.'s) No. 1 R. H. Miller, 330 ft. S, 990 ft. W, C, Sec. 16-18-10 .... Washing to bottom, T.D. 3,340 ft.

Red Hawk Oil Co.'s No. 1 Mathews, 330 ft. N, 330 ft. E, C, Sec. 11-23-9 .... Rig up.

ARKANSAS
CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E. C. Sec. 31-18-3 .... Cmtd. back to 2,888 ft; T.D. 2,925 ft; arranging whipstock 2,865 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W. C NW SE, Sec. 4-20-8 .... O.W.D.D; comp. Dec. 31; junked 330 ft; hole clean; drlg. 337 ft

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 .... Swedging csg. 2,300 ft; T.D. 3,740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 30 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13 .... S.D. title work; T.D. 2,100 ft.

J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15 .... Drlg. 820 ft.

GARLAND COUNTY
(Cable tools)

Givens et al's No. 1 Garrett, 660 ft. S, 660 ft. W. C, Sec. 1-8-19 .... Hole full S.W; pulling 5 3/16-in., T.D. 3,756 ft.

GRANT COUNTY

Spann & McClung's No. 1 Sarah Page, 660 ft. W, 660 ft. S, NE cor. NW, Sec. 3-3-12 .... Location.

HOT SPRINGS COUNTY

Anisman et al's No. 1 Hinson est., NE NE, Sec. 19-4-16 (portable rig) .... Claim gas show 14-ft. sand 1,604 ft; no 5 3/16-in. csg. set; S.D; W.O. 1,604 ft.

John Watkins' No. 1 Cunningham (was J. R. Lockhart's), 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16.. Cmtd. 12½-in. 42 ft; S.D. 110 ft.

LAFAYETTE COUNTY

McIver et al's No. 1 Hottle, NW cor. NE, Sec. 1-20-6 .... Began drlg. Nov. 8; S.D. 21 ft.

Smitherman & McDonald's No. 1 Reed, 200 ft. N, 200 ft. W, SE cor. NW NW, Sec. 16-15-22 .... Began drlg. Jan. 14; cmtd. 12½-in. 42 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29 .... Location.

G. R. Stevens et al's No. 1 Greason (was A. L. Buck's), NW NW, Sec. 25-12-32 .... Coring 2,767 ft.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26.. .. S.D; W.O. 3,610 ft.

MADISON COUNTY
(Cable tools)

J. W. Baxter's No. 2 Hallin, C, Sec. 17-16-25.... T.A. 405 ft.

J. W. Baxter's No. 3 Hallin, NE SW, Sec. 1-17-26.... S.D. 50 ft.

MILLER COUNTY

Bullock Oil Co.'s No. 1 Hervey, SE NE, Sec. 33-14-26 .... S.D. repairing rig; T.D. 2,803 ft.

East Texas O. & G. Co.'s No. 1 Harvey, 500 ft. E. 300 ft. S, NW cor., Sec. 2-15-26.... Set full string 4½-in. 2,957 ft; S. W. 2,961 ft; arranging core.

E. & F. Oil Co.'s No. 1 E. L. Beck, 200 ft. S, 200 ft. E, NW cor. SW, Sec. 36-15-26.... S.D; sidetracking short string 4½-in; T.D. 2,961 ft.

Fitzwater et al's No. 1 Beck, 200 ft. N, 200 ft. W, SE cor. SW SE, Sec. 33-15-26 .... Began drlg. Oct. 13; cmtd.10 in. 93 ft.

Gusher Bend Oil Co.'s No. 1 Adams, 120 ft. S, 800 ft. W, NE cor. NW, Sec. 26-14-26.... Drlg. 1,180 ft.

Lenz et al's No. 2 Johnson, SE cor., Sec. 24-15-16 .... Drlg. 4,350 ft.

Lenz et al's No. 3 Johnson, 250 ft. W, 150 ft. N, SE cor. NE NW, Sec. 24-15-26.... S.D. 2,850 ft.

Salzer & McRae's No. 1 Rose, SW cor. NE SW, Sec. 9-16-26 .... S.D. fuel 475 ft.

OUACHITA COUNTY

Belmont et al's No. 1 Buck, SE cor. SE SW, Sec. 16-15-17 .... S.D. 2,907 ft.

Copenhaven et al's No. 1 Elliott, Sec. 11-15-17.... D.S. stuck; T.D. 2,114 ft.

PIKE COUNTY

R. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 .... Coring 2,063 ft.

R. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 .... Derrick.

POPE COUNTY

Ark.-La. P. L. Co.'s No. 2 McFaddin, 685 ft. N, 485 ft. W, SE cor. NE SW, Sec. 15-9-21.... Cmtd. 8-in. 3,451 ft.

SCOTT COUNTY

Ark. Valley Gas Co.'s No. 1 Turner, C SE, Sec. 27-5-30.... Location.

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26.... Reaming 1,405 ft; T.D. 1,536 ft.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N. 330 ft. E, SW cor. NE SW, Sec. 3-18-13.... Drlg. 1,850 ft.

J. B. Hickman's No. 1 Hogg, 330 ft. S, 150 ft. E. NW cor. SE SE, Sec. 35-16-17.... Coring sandy gumbo 3,030 ft.

H. L. Hunt's No. 5 Swilly, 330 ft. S, 330 ft. W, NE cor., Sec. 28-16-16 .... W.O.S.R; 2,000 ft. fluid; T.D. 2,689 ft.

H. L. Hunt's No. 6 Swilly, 330 ft. N, 330 ft. W, SE cor., Sec. 21-16-16 .... 1,000 ft. fluid 4,090 ft; S.W. 2,711 ft; W.O.S.R.

Marine Oil Co.'s No. 3-B Thompson, 330 ft. S, 330 ft. E, NW cor. SE NE, Sec. 10-18-13 .... Cored oil sand 3,554-57 ft; cmtd. 6⅝-in. 3,551 ft.

Marine Oil Co.'s No. 1-F Winn, Sec. 10-18-13.... Hole full fluid 50% S.W; waiting on air; T.D. 3,604 ft.

Oil Field Corp.'s No. 1 Simmons, 330 ft. S, 330 ft. E, NW cor., Sec. 13-18-13 .... D.S. test 3,556-3,602 ft; S.W; T.D. 3,602 ft.

VAN BUREN COUNTY

Glenn Kohle et al's No. 1 Scalan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13.... S.D. 50 ft.

WASHINGTON COUNTY
(Cable tools)

Delbert & Graves' No. 1 Cunningham, Sec. 14-15-32.... S.D; W.O. 602 ft.

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 .... S.D. 1,697 ft.

H. H. Taylor et al's No. 1 Runny, C NE SW, Sec. 1-13-29 S.D. 1,700 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 .... S.D. 5,710 ft.

EAST TEXAS
BOWIE COUNTY

Maud-Redwater Oil Co.'s No. 1 Merritt, 175 ft. N, 175 ft. E, SE cor. G. W. Hardige 100-ac. tr. on Floyd Merritt tr, in Y. S. McKinney Sur. .... S.D. 632 ft.

Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. .... S.D. 720 ft.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S. NW cor. 127-ac. tr., in J. H. Murphy Sur. .... Cored sand 3,510-20 ft; drlg. 3,600 ft.

CASS COUNTY

Wesley Morse et al's No. 1 Henderson, 800 ft. E, 1,100 ft. S, NW cor. C. E. Bailey Sur. .... Derrick.

Olds & Smith's No. 1 Athey, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Byers Sur. .... Drlg. 590 ft.

John C. Rogers' No. 1 I. E. Lanier, 573 ft. N. 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. .... Cored limey shale 2,270-75 ft; S.D.

John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. .... S.D. 360 ft.

MARION COUNTY

George Hindman et al's No. 1 F. V. Lindsey, 2,500 ft. S most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. .... Derrick.

Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W, most northerly SW cor., 1,638 ft. N, most northerly S line, W. J. Wills Sur. .... Location.

P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. .... Fishing 10 joints D.S.; T.D. 1,884 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... Drlg. 2,795 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... Swedging 3 joints collapsed 8-in; arranging to cmt. 6⅝-in. and packer 2,812 ft.

SHELBY COUNTY

Chapparell Oil Co.'s No. 2 Holt, Matthew Moore Sur. .... S.D. 3,107 ft.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 48)

KINGMAN COUNTY

Skelly Oil's No. 1 Miles, NE cor. Sec. 30-27-10w .... 1,635-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,133-42 ft. 3,000,000 ft. gas; showing oil 3,385 ft.; drlg. 3,431 ft.; flowed 215 bbls.

KIOWA COUNTY

Phillips-Prairie's No. 1 Bean, NE SE Sec. 10-30-17w .... Drlg. 5,312 ft.

McKenna et al's No. 1 Ralston, C NE Sec. 14-28-20w .... Rig.

LYONS COUNTY

Griffith et al's No. 1 King, NW cor. Sec. 8-19-10 .... Shut down 910 ft.

MARION COUNTY

Aladdin Pet.'s No. 1 Koch, NW NE Sec. 36-17-3 .... Rig.

Midwell's No. 1 La Master, NW cor. Sec. 31-22-4 .... Shut down 650 ft.

McPHERSON COUNTY

United Pet. Co.'s No. 1 Kaigi, NE cor. Sec. 20-19-1w .... Drlg. 2,395 ft.

Henderson & Holden's No. 1 Sommerfield, NE NW Sec. 23-19-1w .... Drlg. 2,917 ft.

Aladdin Pet.'s No. 1 Rudolph, NW NE Sec. 36-18-3w .... Rig.

Slick et al's No. 1 Randall, C SW SW Sec. 35-17-3w .... Drlg. 2,715 ft.

Aladdin Pet. Co.'s No. 1 Larson, C NW Sec. 22-18-4w .. Rig.

MORTON COUNTY

Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w .... Fishing 5-in. csg. 3,460 ft.

MORRIS COUNTY

Great Basin Oil Co.'s No. 1 Ballyntine, SW SE SE Sec. 18-16-5 .... Fishing 1,300 ft.

Urschell et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7. Machine.

Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9 .. Rig.

NESS COUNTY

Gypsy Oil Co.'s No. 1 Coleman, C SW NE Sec. 25-17-25w. Shut down 3,245 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w .... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 .... Shut down 1,050 ft.

PAWNEE COUNTY

Phillips' No. 1 Cuthbertson, NE cor. Sec. 27-20-18w .... Drlg. 4,079 ft.

PRATT COUNTY

Wilcox O. & G. Co.'s No. 1 Bappin, SW NW Sec. 7-26-15w .... Shut down 4,665 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Unknown, SW cor. Sec. 3-?-35w .... Shut down 2,005 ft.

RICE COUNTY

Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Rig.

Gypsy Oil Co.'s No. 1 Koenig, SW NE Sec. 10-20-10w .... Drlg. 2,965 ft.

Muth Bros.' No. 1 Beyers, NE NW Sec. 21-19-9w .... Sand 2,000-02 ft.; 3,000,000 ft. gas; shut down 3,085 ft.

ROOKS COUNTY

Empire Oil & Ref. Co.'s No. 1 Halsman, SW NE SE Sec. 17-7-20w .... Drlg. 980 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w .... Rig.

RUSSELL COUNTY

Austin Drlg. Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w .... Show oil 3,042-44 ft.; bailed 18 bbls. 3 hrs.; now shut down.

Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .... Shut down 2,475 ft.

SEDGWICK COUNTY

Streeter & Stearns' No. 1 Tobin, SW SE NE Sec. 5-22-2.. Drlg. 2,385 ft.

Buck et al's No. 1 McNananan, NE NW NW Sec. 2-29-1.. Rig.

SALINE COUNTY

Sampson et al's No. 1 Sudenderf, NE SE Sec. 30-14-2w .. Drlg. 2,700 ft.

Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w .... Shut down 2,700 ft.

STEVENS COUNTY

McNabb and Mid-Kansas' No. 1 Rhinehart, C NE Sec. 23-35-39w .... Shut down 1,612 ft.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 ... Shut down 1,720 ft.

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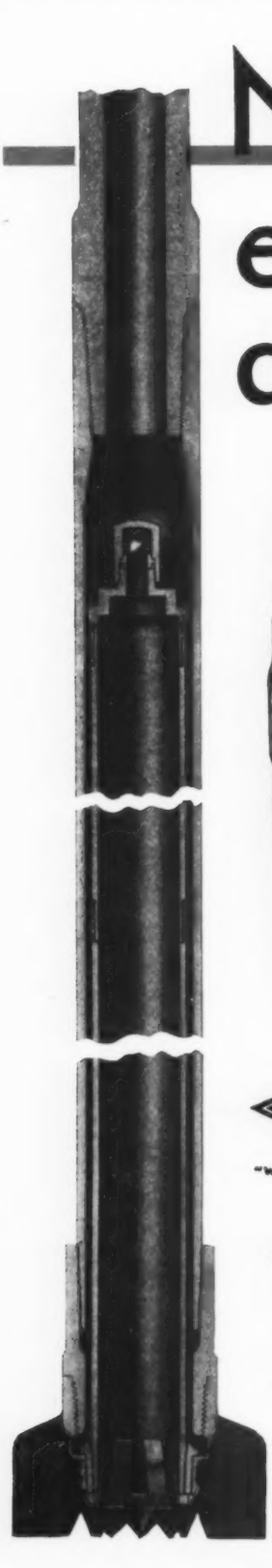

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California Gasoline Shipments Decline

For First Time in Years, That State, in 1930, Lost Its Role as Price Maker in Eastern Markets

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Jan. 27.—Shipments of California gasoline into Atlantic Coast markets during 1930 fell off somewhat from peak levels established in the previous year, and California, for the first time in several years, lost its role as gasoline price maker in eastern markets.

Total shipments of California gasoline to Atlantic and Gulf Coast markets (almost entirely the former) amounted to 19,789,000 bbls. for 1930, compared with 21,347,000 bbls. in 1929 and 14,958,000 bbls. in 1928. The falling-off in California shipments was due both to the unfavorable market in the East throughout the year, and the greater control over California shipments at the source, which resulted in a regulation of shipments of Pacific Coast motor fuel to the consuming requirements of the East Coast markets.

Shipments of principal California refined petroleum products to the East by quarters for 1930, with comparisons with the two previous years, were as follows:

	First quarter			Second quarter		
	1930	1929	1928	1930	1929	1928
Gasoline	4,698,000	4,817,000	2,397,000	4,091,000	4,700,000	4,314,000
Gas oil	534,000	501,000	459,000	442,000	158,000	377,000
Fuel oil	428,000	.....	68,000	411,000	50,000	105,000
	Third quarter			Fourth quarter		
	1930	1929	1928	1930	1929	1928
Gasoline	6,892,000	5,411,000	2,953,000	4,208,000	6,419,000	5,294,000
Gas oil	391,000	137,000	361,000	640,000	531,000	379,000
Fuel oil	336,000	70,000	76,000	524,000	328,000	.....

Depressed markets for gasoline and other refined products at the Gulf and in East Coast markets prevailed during the greater part of 1930 and this circumstance, together with a shortage of tankers for the intercoastal movement of refined products, tended to greatly restrict open market operations in Pacific Coast motor fuel for shipments eastward.

Shipments of refined petroleum products from California to eastern United States ports for the first 11 months of 1930, according to the Department of Commerce, totaled 23,071,000 bbls., as compared with 25,192,000 bbls. in the corresponding months of 1929. Details follow:

	Bbls. of 42 gallons — First 11 months	
Product—	1930	1929
Gasoline	18,684,000	21,507,000
Kerosene	198,000	176,000
Gas oil	3,799,000	3,068,000
Diesel oil	208,000	140,000
Fuel oil	35,000	104,000
Lubricants	128,000	171,000
Asphalt	19,000	26,000

Less Dumping

Whereas in previous years independent operators had brought considerable quantities of California gasoline eastward, which was dumped in eastern markets at concessions under posted price levels, this type of competition was extremely rare during the year under review. Several cargoes of distressed gasoline did find their way eastward from California during the year, but this gasoline passed into the hands of established marketers on its arrival at Atlantic Coast ports and was moved into consuming channels through regular outlets.

Weakness in the general gasoline situation at eastern refineries during the greater part of 1930 tended to take California gasoline out of the premium class, and, while in formers years the Pacific Coast product commanded a premium of a half to 1 cent per gallon over East Coast gasoline in eastern jobbing circles, the California product sold on a par with eastern gasolines at most times. Aside from the weak markets prevailing in this territory, the fact that most of the large refining companies operating here had greatly improved the antiknock qualities of their regular grades of gasoline was also instrumental in bringing the California product down to an equal price level. The premium which formerly prevailed on Pacific Coast motor fuel here was based almost entirely upon the superior natural antiknock qualities claimed for the California product.

Practically all of the large integrated companies marketing in East Coast territory are now regular handlers of California gasoline, which is marketed both in its natural form and in mixture with gasolines from other refining areas. The California product, however, is still largely used by many marketers in their premium blends, and is treated with various compounds at bulk terminals in the East before going into regular marketing channels.

Notwithstanding curtailment of refining operations, California refinery stocks of gasoline continue topheavy and the total on hand at the start of the year comprised more than 40 per cent of the total gasoline stocks held by refiners in all parts of the country. A comparison of gasoline holdings as of January 3, 1931, and December 31, 1929, follows:

	Bbls. of 42 gals.	
	Jan. 3,	Dec. 31,
District—	1931*	1929†
East Coast	5,868,000	6,063,000
Appalachian	1,051,000	1,383,000
Indiana, Illinois, Kentucky	4,542,000	5,634,000
Oklahoma, Kansas, Missouri	2,854,000	4,123,000
Texas	6,912,000	6,648,000
Louisiana-Arkansas	1,526,000	2,145,000
Rocky Mountain	1,689,000	2,334,000
California	15,338,000	14,785,000
Total	39,780,000	43,115,000

*A.P.I. figures. †Department of Commerce figures.

California operators are making strenuous efforts to curtail output of crude, and, while considerable success has attended these efforts, the crude oil situation in California is still cause for considerable concern in eastern oil circles, and the same is true of the statistical position of the gasoline market in California.

Potential Danger Spot

Thus, while all other refining areas of the United States have been cutting their storage stocks of gasoline in an effort to bring these holdings down to working stock levels (with the exception of Texas, which registered a slight gain) California gasoline stocks have increased more than 500,000 bbls. during the past year, leaving the Pacific Coast refining industry still as the potential "danger spot" for the remainder of the industry, particularly East Coast refiners, who during past unloading campaigns by California refiners have been forced to meet uneconomic price competition.

East Coast interests are uncertain regarding the outlook for an increase in California gasoline shipments to Atlantic Coast markets during 1931. It is generally felt, however, that if refiners operating in the West Indies adhere to their reported plan of curtailing gasoline shipments to United States Gulf and East Coast ports during 1931, and divert their motor fuel production into export markets instead, that California gasoline movement may be stepped up somewhat to replace some of the South American gasolines and that 1931 receipts in this area may record some gains over those for the year just ended.

Detailed data on weekly shipments of principal refined products from California to Atlantic and Gulf Coast ports during the past year, with comparable figures for 1929, are given in the accompanying table.

1930

	Barrels					
Week ending—	Gasoline	Kerosene	Gas oil	Fuel oil	Kerosene distillate	Lubricants
January 4	83,000	95,000	78,000	.....	.....	.....
January 11	447,000	.....	.....	.....	95,000	11,000
January 18	575,000	.....	120,000	95,000	25,000	.....
January 25	535,000	.....	130,000	.....	.....	.....
February 1	398,000	.....	.....	.....	.....	.....
February 8	379,000	30,000	.....	70,000	.....	.....
February 15	612,000	.....	.....	.....	.....	.....
February 22	117,000	.....	.....	95,000	.....	.....
March 1	105,000	.....	70,000	.....	.....	.....
March 8	178,000	.....	.....	94,000	50,000	.....
March 15	470,000	.....	74,000	.....	.....	21,000
March 22	360,000	.....	62,000	74,000	15,000	.....
March 29	439,000	.....	.....	.....	20,000	.....
April 5	197,000	.....	.....	146,000	.....	.....
April 12	176,000	.....	78,000	.....	.....	.....
April 19	195,000	.....	.....	.....	.....	.....
April 26	393,000	.....	20,000	.....	.....	29,000
May 3	372,000	.....	50,000	95,000	.....	.....
May 10	263,000	.....	.....	.....	.....	.....
May 17	455,000	.....	62,000	95,000	.....	.....
May 24	387,000	.....	.....	.....	.....	.....
May 31	180,000	.....	.....	.....	.....	.....
June 7	274,000	.....	116,000	.....	.....	.....
June 14	368,000	.....	.....	.....	.....	37,000
June 21	445,000	.....	52,000	.....	.....	.....
June 28	386,000	.....	64,000	75,000	.....	.....
July 5	693,000	55,000	.....	.....	.....	.....
July 12	451,000	.....	.....	.....	.....	.....
July 19	1,089,000	.....	.....	.....	.....	.....
July 26	443,000	.....	.....	.....	.....	.....
August 2	686,000	.....	.....	92,000	.....	8,000
August 9	506,000	.....	265,000	80,000	.....	.....
August 16	399,000	.....	.....	.....	.....	.....
August 23	423,000	.....	74,000	.....	.....	.....
August 30	512,000	.....	.....	.....	.....	.....
September 6	602,000	.....	.....	99,000	.....	.....
September 13	368,000	.....	.....	.....	.....	.....
September 20	216,000	.....	.....	.....	.....	3,000
September 27	498,000	.....	52,000	65,000	.....	.....
October 4	207,000	.....	.....	75,000	.....	.....
October 11	308,000	.....	64,000	.....	.....	.....
October 18	542,000	.....	.....	.....	.....	.....
October 25	475,000	.....	102,000	80,000	.....	.....
November 1	81,000	45,000	.....	.....	.....	.....
November 8	606,000	.....	64,000	44,000	.....	3,000
November 15	166,000	.....	.....	40,000	.....	.....
November 22	544,000	.....	156,000	52,000	.....	.....
November 29	347,000	.....	.....	73,000	.....	.....
December 6	405,000	.....	.....	80,000	.....	.....
December 13	348,000	.....	.....	.....	.....	.....
December 20	115,000	124,000	142,000	18,000	.....	.....
December 27	64,000	.....	112,000	62,000	.....	11,000

1929

	Barrels				
Week ending—	Gasoline	Gas oil	Fuel oil	Crude	Kerosene and kerosene distillate
January 5	239,000	.....	.....	.....	28,000
January 12	387,000	.....	.....	.....	.....
January 19	418,000	.....	.....	.....	.....
January 26	294,000	.....	.....	.....	96,000
February 2	68,000	.....	.....	332,000	.....
February 9	654,000	77,000	.....	.....	.....
February 16	445,000	172,000	.....	.....	.....
February 23	80,000	.....	.....	.....	80,000
March 2	517,000	96,000	.....	175,000	.....
March 9	287,000	78,000	.....	.....	.....
March 16	225,000	.....	.....	.....	.....
March 23	667,000	.....	.....	.....	.....
March 30	536,000	78,000	.....	58,000	190,000
April 6	242,000	88,000	50,000	75,000	70,000
April 13	172,000	.....	.....	75,000	.....
April 20	355,000	70,000	.....	.....	.....
April 27	408,000	.....	.....	.....	.....
May 4	262,000	.....	.....	.....	80,000
May 11	374,000	.....	.....	.....	.....
May 18	537,000	.....	.....	.....	.....
May 25	414,000	.....	.....	95,000	.....
June 1	312,000	.....	.....	.....	.....
June 8	161,000	.....	.....	96,000	.....
June 15	387,000	.....	.....	.....	81,000
June 22	595,000	.....	.....	.....	.....
June 29	381,000	.....	.....	.....	.....
July 6	610,000	.....	.....	70,000	.....
July 13	382,000	.....	.....	95,000	76,000
July 20	159,000	.....	.....	.....	.....
July 27	328,000	.....	.....	129,000	.....
August 3	821,000	.....	.....	79,000	.....
August 10	349,000	.....	.....	.....	.....
August 17	259,000	.....	70,000	.....	77,000
August 24	412,000	.....	.....	.....	.....
August 31	529,000	.....	.....	.....	152,000
September 7	260,000	.....	.....	.....	.....
September 14	395,000	.....	.....	.....	.....
September 21	690,000	.....	.....	.....	15,000
September 28	217,000	137,000	.....	.....	38,000
October 5	233,000	60,000	78,000	.....	.....
October 12	441,000	.....	.....	.....	.....
October 19	623,000	163,000	.....	.....	50,000
October 26	503,000	78,000	.....	.....	80,000
November 2	341,000	11,000	.....	.....	70,000
November 9	712,000	.....	.....	.....	.....
November 16	443,000	.....	.....	.....	83,000
November 23	440,000	64,000	12,000	.....	32,000
November 30	498,000	.....	.....	.....	.....
December 7	685,000	80,000	70,000	.....	50,000
December 14	349,000	75,000	.....	.....	.....
December 21	552,000	.....	168,000	.....	.....
December 28	599,000	.....	.....	.....	.....

Of Interest to Sales Departments

REFUSE TO REGISTER "NO-NOX" TRADE-MARK

The commissioner of patents at Washington, D. C., has refused the application of the Gulf Refining Co. for a registration of the trade-mark "No-Nox," sustaining the previous ruling of the examiner. The Gulf company filed its application for the trade-mark in July, 1926. The name is used in connection with the marketing of a premium grade of gasoline.

In denying the application for registration the commissioner stated:

"The applicant has appealed from the decision of the examiner of trade-marks denying registration of the notation 'No-Nox' used as a trade-mark for liquid motor fuels. Registration was denied by the examiner on the ground the notation is merely descriptive of a character or quality of the goods.

"The examiner states, and the applicant does not dispute the fact, that it is a matter of common knowledge among users of automobiles that under some conditions, the motor will 'knock.' To this statement may be added the further fact that the 'knocking' of the motor is generally attributed to preignition of the charge, that is, the ignition of the charge before compression in the cylinder has been increased to the maximum. Some grades of gasoline were until recently regarded as producing this 'knocking' of the motor to a greater extent than other grades.

"The applicant has contended that the notation was originally adopted with the view of conveying the suggestion to users of the applicant's goods that it was nonpoisonous or nonnoxious. There have been submitted certain photographs, seven in number, of advertisements used by the applicant, in which the word 'nonpoisonous' is used. These exhibits fail to include the word 'nonnoxious,' but all, save two, also include the words 'stops knocks.'

"In the light of the adjudicated cases, the applicant's notation must be held merely descriptive of the character or quality of its goods if the purchasing public would obtain from it nothing more than the information that the applicant's gasoline would, when used in a motor, produce no knocks.

"It seems clear enough this notation would have only this effect upon the minds of users of the applicant's gasoline. 'Nox' is an obvious misspelling of 'knocks,' and is, in fact, given in the dictionary as indicating the proper pronunciation of the latter. The notation appears to be but an equivalent in its meaning of antiknocking or nonknocking when applied to gasoline.

"While it should not be held that in all instances the word 'No' followed by a second word indicative of function is merely descriptive of the goods, yet in the instant case it is believed this general rule applies."

STANDARD CUTS TIRE PRICES

Meeting the reductions in tire prices announced by leading tire manufacturers Standard Oil Co. (Indiana) has issued a new schedule of lower prices on Atlas tires, effective January 15, at 1,500 stations controlled by the company and several thousand dealer outlets in 13 states. The new prices are from 7½ to 12½ per cent lower than the old, with maximum reductions on the more popular sizes.

SPACE AT SHOW IN DEMAND

Only 10 of the 125 booths at the American Oil Burner Association's show, April 14 to 18, in Philadelphia, remain to be sold, according to Harry F. Tapp, executive secretary, who also announced the completion of plans for holding the oil burner industry's eighth annual convention and show.

ENGINE DESIGN AND OPERATION FACTORS IN GASOLINE RATINGS

Influence of variables affecting the relative antiknock values of certain fuels is studied in two papers presented at the annual meeting of the Society of Automotive Engineers, at Detroit, last week.

"Effect of Jacket Temperature and Cylinder-Head Temperature Upon Relative Knock-Ratings," by Graham Edgar, director of research of the Ethyl Gasoline Corp., finds as follows: (1) The relative antiknock value of fuels is in general definitely affected by changes in jacket temperature; (2) if the spark-advance is fixed, marked differences may be expected in results obtained at different compression ratios, when comparing benzene blends with tetraethyl lead blends; (3) if the spark-advance is adjusted for maximum power, the effect of varying the compression ratio is minimized; (4) some indication is given that all results may be functions of the cylinder-head temperature alone, although the data are not sufficiently complete to be conclusive.

"Influence of Carburetor Setting and Spark Timing on Knock Ratings," by John M. Campbell, Wheeler G. Lovell and T. A. Boyd, presents data on an investigation which found that in the method of determining the antiknock quality of motor fuel by comparison with a standard or reference fuel, the comparison may be affected either by the carburetor adjustment or by the spark timing or by both. The conclusion was that in establishing a standard method of comparing one fuel with another, some definite specification covering each of these two engine variables must be drawn up. This specification would correspond reasonably well with conventional conditions of engine operation and at the same time with convenient laboratory technique. From the results of this study these conditions would appear to be fulfilled best by using the carburetor setting for maximum knock and the spark timing for maximum power.

Mr. Campbell is research chemist at the General Motors Corp. laboratories. Mr. Lovell is assistant head of the fuel section, and Mr Boyd is head of the fuel section, at the General Motors laboratories.

Method of Testing

In both investigations, the experiments were carried out with one of the single-cylinder, variable-compression test engines which is being developed in connection with the work of the subcommittee on methods of measuring detonation, of the co-operative fuel research steering committee. The speed was held constant at 600 r.p.m. by a 2 horsepower synchronous converter that was connected by V-belts to the flywheel of the engine. In the investigation on the influence of carburetor setting and spark timing on knock ratings, an evaporative cooling system provided with forced circulation maintained the temperature of the jacket water at about 212° F. The bouncing pin indicator was used in both cases.

The following information is taken from Mr. Edgar's paper on the effect of jacket temperature and cylinder head temperature upon relative knock ratings.

Two sets of tests were run, one consisted in adding tetraethyl lead or crude benzene to one of the six test fuels to make it equal in knock intensity to each of the other five. In the other series the quantities of tetraethyl lead that must be added to a straightrun Mid-Continent gasoline to give knock ratings equal to different percentages of chemically pure benzene in the same fuel were determined.

Fuels employed in the first test were, a straightrun Pennsylvania gasoline, a benzol blend, an aviation gasoline, a California gasoline, a leaded gasoline and a cracked gasoline. Compression ratios of 6, 7 and 8 to 1 were employed at 212° F. jacket temperature and 6 to 1 at 350° F. jacket temperature. The spark advance was adjusted for each compression ratio to the position of maximum power. Cylinder head temperatures were recorded by a thermocouple.

In the second test the data consist of determinations under a wide variety of conditions of the quantity of tetraethyl lead in a Mid-Continent straightrun gasoline to equal 30, 40, 50 and 60 per cent of chemically pure benzene in the same gasoline. In one case the compression ratio was kept constant at 6.5 to 1, and the fuel matches made at 212°, 275° and 350° F., the hrottle being adjusted to keep the intensity of knock constant. In another case the same experiments were carried out at a 10 to 1 compression ratio, and in still another case the throttle was kept wide open, and fuel matches made at 212° 275° and 350° F., the compression ratio being adjusted to keep the knock intensity constant.

Interpretation of the results: ratings are affected only indirectly by the compression ratio and the cylinder head temperature determines the knock rating; at high cylinder head temperatures lead becomes relatively more effective than benzol as an antiknock agent.

In their paper, Messrs. Campbell, Lovell and Boyd present the following description of their method: Control in studying the influence of carburetor setting and spark timing on knock rating was accomplished by observing the timing of the spark by the flash in a small neon

(Continued on Page 218)

WORK ON UNIFORM LAW TO CURB TAX EVASION

W. T. Holliday, Standard Oil Co. of Ohio, Cleveland. Ohio, has been made chairman of a committee of lawyers appointed by President E. B. Reeser of the American Petroleum Institute to draft a proposed uniform state law designed to prevent evasion of payment of gasoline taxes.

The draft of the proposed law is to be submitted to the Institute's board of directors for consideration and possible recommendation to the states, in the belief that uniform statutes having sufficient "teeth" would go far to combat and prevent gasoline tax evasion.

Members of the committee are: H. T. Klein, The Texas Company, New York; E. S. Hall, Standard Oil Co. of New Jersey, New York; F. E. Packard, Standard Oil Co. of Indiana, Chicago; Paul Cregg, Union Oil Co. of California, Los Angeles, Calif.; W. J. Guthrie, Gulf Refining Co., Pittsburgh, Pa.; J. C. Denton, Mid-Continent Petroleum Corp., Tulsa, and W. R. Boyd, Jr., American Petroleum Institute, New York.

CHINESE BUSES INCREASING

Motorbus transportation has developed in China in spite of the internal strife which has been widespread and the shortage of good highways. The number of companies operating buses at the present time cannot be estimated, but prior to the 1930 military turmoil in Central and North China, 267 private lines and provincial services were operating in Anhwei, Chekiang, Hunan, Kiangsi, Kweichow, Shansi, Shantung and Sinkiang provinces, over systems totaling 20,000 miles of highways.

In 1925 there were 632 buses; in 1926, 1,016 buses; in 1927, 2,501 buses; in 1928, 4,149 buses, and in 1929 the number of buses totaled 6,310.

SINCLAIR ACQUIRES 72 MARKETING PROPERTIES

The facilities and business of 72 petroleum marketing concerns and of numerous individual marketers were taken over during 1930 by the Sinclair Refining Co., chief domestic marketing subsidiary of the Sinclair Consolidated Oil Corp., according to an official announcement. These acquisitions represented 8,633 bulk distributing plants, service stations and "re-sale" or dealer outlets. This figure does not include the distributing facilities obtained in Mexico during the year through purchase of the properties and business of the Pierce Petroleum Corp.

None of these acquisions was made in states not already embraced in the Sinclair marketing territory. The properties acquired were in Alabama, Arkansas, Colorado, Connecticut, Georgia, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Texas, Virginia, West Virginia and Wisconsin.

SHELL INTERESTS WILL SELL PENNSYLVANIA OIL

NEW YORK, Jan. 24.—The Shell interests in United States will shortly offer lubricating oils manufactured from 100 per cent Pennsylvania base crude oils according to information made available here.

According to reports from Pennsylvania the Shell companies have contracted with several refiners who are in a position to furnish the lubricants needed. The Shell Petroleum Corp., Shell Eastern Oil Co. and the Shell Oil Co. of California which are the marketing organizations of the Dutch-Shell companies operate approximately 1,000 stations scattered throughout the United States. The lubricants also will be made available to jobber customers of the Shell companies.

It is understood that the Pennsylvania lubricants will be introduced to Shell customers at the same time that Ethyl Gasoline becomes available at Shell stations. The Shell companies recently became licensees of the Ethyl Gasoline Corp.

REDUCES TIRE PRICES

Standard Oil Co. (New Jersey) has announced reductions ranging 7 to 13 per cent in its prices for automobile tires, thus giving consumers the full benefit of the lower tire prices announced by tire manufacturers last week.

Standard Oil Co. of Ohio and Standard Oil Co. of Indiana have announced similar reductions.

The change by the New Jersey and Ohio Standard companies was announced January 15, but it was stated that the lower prices apply as from January 5, on which date Goodrich, Firestone and other leading tire manufacturers posted price cuts on all passenger tires.

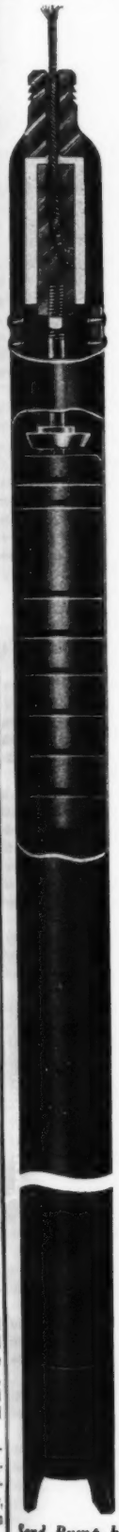
It is expected that all of the oil companies members of Atlas Supply Co., controlled by Standard Oil Co. (New Jersey) will follow the action of the Jersey, Ohio and Indiana Standard companies in cutting tire prices.

MID-CONTINENT DROPS OPTION

The Mid-Continent Petroleum Corp., Tulsa, has announced its decision not to exercise its option on the properties of the Long Oil Co., one of the largest independent service station operators in the Southwest. It was added that the Mid-Continent corporation is not contemplating any other purchase in this territory.

The Long Oil Co., which is incorporated in Kansas for $950,000, operates approximately 75 gasoline service stations. Its headquarters are at Topeka, Kans.

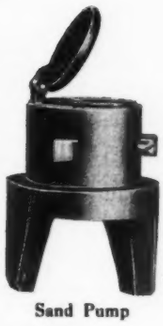
MILLER
Sand Pump



Star Bottom

Chisel Bottom

Bailer Bottom



Sand Pump

Sand Pump bottom shown in pump.

Patented
March 1, 1921, No. 1370340
Jan. 20, 1925, No. 1523604

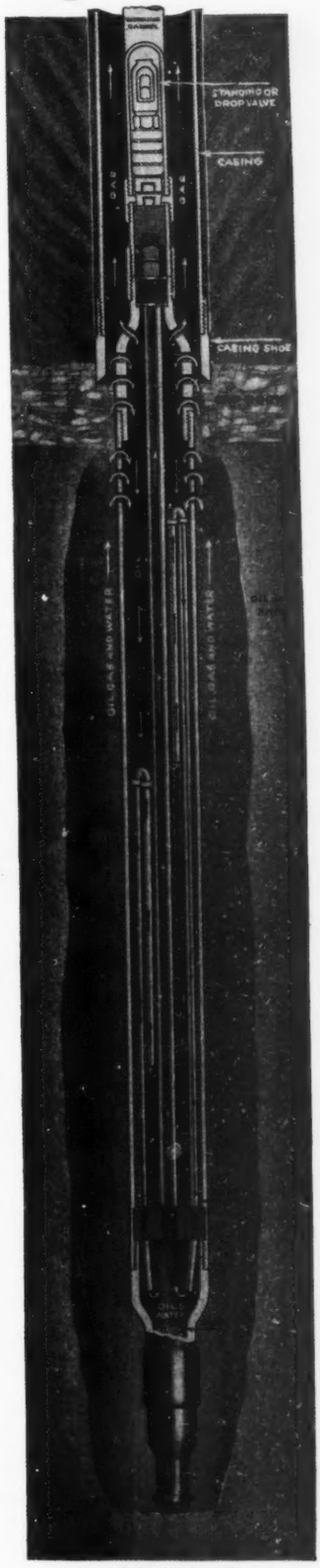
With the Miller Sand Pump you can instantly change the type bottom to meet your requirements. Only in the Miller do you get the exclusive construction by which the wire line connects directly to the plunger permitting use of a 25 or 30-foot barrel, eliminating use of a rod. This is the sand pump that is the field man's choice. It is made to stand abuse, all steel construction throughout, eliminating use of leather washers.

Furnished with four type bottoms illustrated. Made in 2½, 3, 3½, 4, 4¼, 5, 5½ and 7-inch diameters, and 20, 25 and 30-foot lengths.

MILLER
Stands for Quality

Write for fully descriptive folders and price on Miller Equipment, the utmost in quality and economy in operation. Your supply store can supply you.

Chancellor
Separator



The Chancellor Separator is designed to separate Gas, Water and Sand from the oil at the bottom of the well. It reduces your percentage of cut oil—and the way oil companies both large and small are reordering, demonstrates beyond doubt its success.

Used below the working barrel at the bottom of the hole, it prevents gas troubles, because it is a positive gas anchor and stops the pumping of gas through the tubing.

There are no working parts to wear out, will last the life of your tubing. Closed on top, cavings cannot clog the Separator, absolutely guaranteed in every way—it will pay for itself before you are invoiced. This is the result of years of experimenting by practical oil field superintendents. Now being used by most of the larger Oil Companies.

Fully Patented
June 12, 1928, No. 1673663
Oct. 22, 1929, No. 173249

MILLER
Jiffy Pipe Clamp

One trial will convince you that the Miller Jiffy Pipe Clamp is not only the best clamp on the market, but also the most inexpensive. Made of malleable iron, it has sufficient strength to stand the most rigid tests. Expensive packing is unnecessary as any old piece of inner tube or piece of belting will make a good gasket. Order in any quantity through your supply store.

MILLER
Sand Pump Company

General Offices and Plant
SAPULPA, OKLAHOMA, U.S.A.

Year of Low Prices on East Coast

Aggregate Volume Greater but Keener Competition Weakened Markets and Lowered Individual Sales Total

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Jan. 27.—The passing of 1930 into the records has left few mourners in the ranks of the marketing departments of eastern oil companies, the year having been one of low prices and intense competition in most branches of the market, with a resultant unfavorable showing in comparison with previous years.

Taking the principal refined products as a group, there was a normal increase in the aggregate gallonage for the year, but intensive competition and the entry of new factors into the marketing branch of the business resulted in a wider placing of this gallonage and as a result of this condition individual sales totals were lowered in many instances, with some sellers showing a smaller total gallonage for the year than that for 1929.

Notwithstanding the fact that East Coast refiners throughout 1930 were operating on low-cost crude, considerable of which came from South America, depression in refined products markets was so continuous that selling prices fully discounted low first costs and in many instances the reductions in selling prices for products were out of all proportion to the lower crude costs of the refiners.

Curtailment of refinery operations naturally developed under these conditions, and the situation in the East Coast market during the greater part of the year was such as to impose a premium on economic operations and a penalty on uneconomic out-of-date refinery practices.

The year was marked by a still more definite trend toward the closer integration of operations and this program was carried forward with such success that notwithstanding the extremely unfavorable conditions in effect during the greater part of the year many of the large integrated units were able to show moderate profits on both manufacturing and refining operations for the year, although the financial results of 1930 were much less favorable than in 1929, which was one of the most profitable years in the history of the petroleum industry in the East.

Improved Gasoline

Particular attention was devoted last year to the improvement of gasoline qualities and the regular priced motor fuel offerings of most East Coast refiners are now on a par with products which but a few years ago were classed as premium gasolines.

With improvement in quality of product there has likewise come a decided improvement in marketing practices. Many of the more uneconomic phases of previous "price war years" have been abandoned, and, while the retail end of the business is far from stable and still subject to wide fluctuations in many sections of the territory, the general situation is nevertheless much better than in previous years.

Large integrated companies have made substantial progress in the expansion of owned and controlled retail station outlets during the year. Numerous independent stations have been acquired by the marketing subsidiaries of the larger units in the eastern territory, and the operation of these stations has been made more profitable by the addition of tire and accessory stocks at many of these retail units. Another source of added revenue, still in its infancy, is the handling of telegrams for the Western Union and postal systems at many of these retail stations.

Outside Gasolines

While competition of California gasoline in East Coast markets was not the unsettling factor of previous years, the heavy increase in imports of South American gasoline tended to counteract the beneficial effects of the more closely controlled movement of California motor fuel, and East Coast refiners and marketers were called upon to meet a substantial volume of "outside" gasoline competition throughout 1930.

Shell Eastern, handling principally South American motor fuel, and Richfield, marketing California gasolines, substantially widened their operations in East Coast territory during the past year, and, in addition, considerable quantities of South American and California gasolines found their way into Atlantic Seaboard territory through other channels.

Transportation Methods

While numerous new gasoline pipe line projects were announced during 1930, only one major development of this kind directly affected East Coast markets—that of the Sun Oil Co. pipe line, running from the Sun refineries near Philadelphia across Pennsylvania and into Ohio.

Water transportation of gasoline and products, however, achieved considerable momentum in the East. The canalization of the Ohio and numerous other waterways reaching eastern and central markets brought about a pronounced trend toward barge transportation of gasoline to consuming markets adjacent to these streams, and development of the New York State Barge Canal system witnessed an important increase in tanker operations in New York State.

Virtually all of the large companies operating in New York and New England are now using river and canal tankers to handle a large part of their gallonage, and all of the principal companies in this territory now have large bulk terminals at strategic points along the New York State Barge Canal system.

River tankers are a familiar sight in New York harbor and in the Hudson and East Rivers, and considerable quantities of the bulk shipments out of refinery terminals in the Bayonne area are now handled in this manner, replacing tank car shipments to a considerable extent.

Price Cutting

While price cutting in the refinery gasoline market was a more or less common occurrence throughout the year, leading interests met with a fair measure of success in maintaining their tank car gasoline posted price schedules during a large part of 1930.

The hotbed of competition in the refinery market in the local area last year was in the barge market, where sales averaged from 20,000 to 50,000 gallons for each shipment. Substantial concessions from the tank car basis were offered in this branch of the market, and jobbers with storage convenient to waterway routes were centering their operations in barge load purchases to a considerable extent.

The bunker oil market witnessed considerable price shading at various times, and this price cutting was sufficient to break the market to previously existing levels after refiners had put into effect an advance of 10 cents per barrel during the second quarter.

The cylinder oil market likewise came in for considerable price cutting during 1930, and quoted prices of Pennsylvania refiners at times showed a spread of 2 or 3 cents per gallon on the same grade of oil.

Tank Wagon Gasoline

The gasoline tank wagon market started off the year in fairly good shape with general adherence to the code of ethics laid down by the American Petroleum Institute for the guidance of marketers. With the weakening in the refinery market and the intensification of competition during the late spring and summer season, however, this stability suffered a quick breakdown and the market developed decided irregularity, which continued for the balance of the year.

Posted prices for gasoline at retail meant little in some of the larger markets, and it was no uncommon sight to see leading brands of gasoline offered at retail at prices which did not net more than 10 or 10½ cents at the pump.

With the turn of the year, some effort has been put forth to improve the retail division of the market, but it is evident that at least a large part of the first quarter of the new year will be required to restore stability to the retail markets.

Tank Car Gasoline

1930 High, 9c; 1929 High 11c
1930 Low, 6¼c; 1929 Low, 8½c

Prices for U. S. Motor gasoline in tank car lots at refinery terminals during 1930 were consistently under 1929 levels and the industry was burdened during the greater part of the year with excessive stocks and heavy shipments of California and South American motor fuel into the territory.

During the closing quarter, refinery operations were curtailed, and efforts were made to bring refinery holdings down to a working stock level, as recommended by the American Petroleum Institute. Some success attended this move, and the mar-

PRICE RANGE AT BAYONNE

The price range on principal refinery products at Bayonne for 1930, with comparisons for the previous two years, is illustrated by the following table (all prices per gallon unless otherwise specified):

NEW YORK (BAYONNE) REFINERY PRICES

	1930				
	Jan. 1	April 1	July 1	Oct. 1	Dec. 31
Gasoline, U. S. Motor, 58-60, 437	$0.08⅝	$0.08½	$0.09	$0.07⅜	$0.06⅛
Kerosene, water white, 41-43	.07⅜	.07⅜	.07	.06⅜	.06
Fuel oil*, bunker C, 14-16, bbl.	1.05	1.05	1.15	1.05	1.05
Fuel oil†, Diesel, 28-30, bbl.	2.00	2.00	2.00	2.00	1.85
Gas oil, 28 plus gravity	.04⅜	.04⅜	.04⅜	.04⅜	.04½
25 pale Paraffin Oil	.10½	.10½	.10¼	.10¼	.10¼
28 pale Paraffin Oil	.07¼	.07½	.07½	.07¼	.07½
285 red Paraffin Oil	.12½	.12½	.12½	.12½	.12½
250 red Paraffin Oil	.11½	.11½	.11½	.11½	.11½
225 red Paraffin Oil	.10	.10	.10	.10	.10
200 red Paraffin Oil	.09¼	.09¼	.09¼	.09¼	.09¼
Refined wax—					
120-122 a.m.p., per lb.	.03⅜	.03⅝	.02⅜	.03½	.03
125-127 a.m.p., per lb.	.04	.04	.03¼	.03⅜	.03¼
130-132 a.m.p., per lb.	.04⅝	.04½	.03⅝	.03⅝	.03⅝
133-135 a.m.p., per lb.	.05⅝	.05½	.04½	.04⅝	.04¼
135-137 a.m.p., per lb.	.06	.05⅝	.04⅝	.046	.04⅝
Petrolatum, in barrels, carload lots, per pound—					
Dark green	.01⅞	.01⅞	.01⅜	.01⅜	.01⅜
Amber	.03⅜	.03⅜	.03¼	.03½	.03¼
Extra amber	.03½	.03½	.03⅜	.03⅜	.03⅜
Cream	.06⅜	.06⅜	.06⅛	.06	.06
Lily white	.07¼	.06½	.06¼	.06⅝	.06¾
Snow white	.08⅜	.08⅜	.08⅛	.08	.08

*Lighterage 5 cents a barrel extra. †Lighterage 6½ cents a barrel extra.

	1929				
	Jan. 1	April 1	July 1	Oct. 1	Dec. 31
Gasoline, U. S. Motor, 58-60, 437	$0.10½	$0.08¾	$0.11	$0.08⅜	$0.08⅝
Kerosene, water white, 41-43	.09	.08	.08	.08	.07¾
Fuel oil*, bunker "C," 14-16, bbl.	1.05	1.05	1.05	1.05	1.05
Fuel oil†, Diesel, 28-30, bbl.	2.00	2.00	2.00	2.00	2.00
Gas oil, 32-36 gravity	.05¼	.05	.05	.05¼	.04⅝
25 pale Paraffin Oil	.11⅝	.10½	.10½	.10½	.10½
28 pale Paraffin Oil	.07½	.07¼	.07¼	.07¼	.07¼
285 red Paraffin Oil	.11½	.11½	.11½	.11½	.12½
250 red Paraffin Oil	.11	.11	.11	.11	.11½
225 red Paraffin Oil	.09½	.09½	.09½	.09½	.10
200 red Paraffin Oil	.09	.09	.09	.09	.09¼
Refined wax—					
120-122 a.m.p., per lb.	.05⅝	.04⅞	.03⅝	.04	.03⅞
125-127 a.m.p., per lb.	.05⅞	.05¼	.04¼	.04¼	.04
130-132 a.m.p., per lb.	.06⅜	.06¼	.04⅝	.05½	.04⅝
133-135 a.m.p., per lb.	.07⅝	.06⅝	.06⅛	.06⅛	.04⅝
135-137 a.m.p., per lb.	.07⅝	.07¼	.06½	.06¼	.06
Petrolatum, in barrels, carload lots, per pound—					
Dark green	.02	.02	.02	.019	.01⅞
Amber	.03½	.03½	.03½	.03⅝	.03⅜
Extra amber	.03⅝	.03⅝	.03⅝	.03⅞	.03⅛
Cream	.06½	.06½	.06½	.06⅝	.06⅜
Lily white	.07½	.07½	.07½	.07⅜	.07¼
Snow white	.08½	.08½	.08½	.08⅝	.08⅜

*Lighterage 5 cents a barrel extra. †Lighterage 6½ cents a barrel extra.

	1928				
	Jan. 1	April 1	July 1	Oct. 1	Dec. 31
Gasoline, U. S. Motor, 58-60, 437	$0.08¼	$0.09	$0.10¾	$0.08⅜	$0.10½
Kerosene, water white, 41-43	.07½	.07½	.08	.09	.09
Fuel oil*, bunker "C," 14-16, bbl.	1.35	1.35	1.15	1.05	1.05
Fuel oil†, Diesel, 28-30, bbl.	2.10	2.00	2.00	2.00	2.00
Gas oil, 32-36 gravity	.05¼	.05¼	.05¼	.05¼	.05¼
25 pale Paraffin Oil	.12	.12	.12	.11⅝	.11⅝
28 pale Paraffin Oil	.07	.07	.07	.07	.07½
285 red Paraffin Oil	.11½	.11½	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½	.10½	.11
225 red Paraffin Oil	.09½	.09½	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09	.09	.09
Refined wax—					
120-122 a.m.p. per lb.	.03⅜	.04	.04⅜	.05½	.05⅝
125-127 a.m.p., per lb.	.04	.04½	.04⅝	.05⅝	.05⅞
130-132 a.m.p., per lb.	.04½	.04½	.04⅞	.06⅛	.06⅜
135-137 a.m.p., per lb.	.05¼	.06	.06⅝	.07⅛	.07⅜
Petrolatum, in barrels, carload lots, per pound—					
Dark green	.01⅞	.02	.02	.02	.02
Amber	.03⅝	.03⅝	.03½	.03½	.03½
Extra amber	.03⅝	.03⅝	.03⅝	.03⅜	.03⅝
Cream	.06½	.06½	.06⅜	.06¼	.06¼
Lily white	.08½	.08¼	.08	.07¼	.07¼
Snow white	.09½	.09¼	.08¼	.08¼	.08¼

*Lighterage 5 cents a barrel extra. †Lighterage 6½ cents a barrel extra.

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ket goes into 1931 in better shape and with a more favorable outlook for a stable market.

Refinery Kerosene

1930 High, 7¾c; 1929 High, 9c
1930 Low, 6c; 1929 Low, 7¾c

The market for 41-43 prime white kerosene was subject to the same conditions which made for such an unfavorable gasoline market in East Coast territory last year, and refinery prices were substantially under 1929 levels during the greater part of the year .

Some signs of improvement developed in kerosene during the closing quarter, however, and with refiners committed to a policy of reduction of surplus holdings better things are looked for from the market during 1931.

Diesel Oil

1930 High, $2.00; 1929 High, $2.00
1930 Low, $1.85; 1929 Low, $2.00

Volume in Diesel oil sales did not show the expected gains during the past year, due largely to a falling off in consumption during the second half, and the market weakened under selling pressure. Posted prices were cut 15 cents to $1.85 a barrel during the closing quarter of the year, with corresponding reductions at Gulf and other ports.

Total volume of Diesel oil sales for the year at East Coast ports is believed to have run slightly in excess of the 1929 figures, but the sales gain which had been looked for, variously estimated at 10 to 20 per cent, did not materialize.

Diesel oil is in rather easy position as 1931 gets under way, and the price outlook for the first half of the current year is largely dependent upon the success of East Coast refiners in cutting both production and refinery stocks.

Bunker Oil

1930 High, $1.15; 1929 High, $1.05
1930 Low, $1.05; 1929 Low, $1.05

Bunker oil markets worked into firmer position in this area during the second quarter, and refiners advanced their prices by 10 cents per barrel to $1.15 at terminals. The advance failed to hold, however, and the market soon slumped back to the $1.05 level.

Depression in the shipping industry during the second half of 1930, resulting in some falling off in volume of sales at Atlantic ports, was accompanied by a heavy influx of South American fuel oil, with considerable bunker oil coming in from the Gulf. The market was oversupplied at the close of the year with the same condition in evidence as 1931 gets under way. There is some talk in oil circles regarding a possible cut to $1 a barrel or less for bunker "C" during the first half of 1931, but leading factors in the market are endeavoring to stabilize bunker oil at present levels.

Total volume in bunker oil at East Coast ports during 1930 is believed to have shown a slight falling-off from 1929 levels.

Gas Oil

1930 High, 4¾c; 1929 High, 5¼c
1930 Low, 4¼c; 1929 Low, 4¾c

Excessive competition prevailed in the gas oil market during the greater part of the year, and price cutting was general throughout. The posted price was nominal most of the time.

An interesting development of 1930 was the substitution of heavy fuel oil for gas oil in manufacturing operations by several artificial gas companies in the East, and this trend is expected to continue as consuming manufacturers gain more experience and success in the substitution.

Gas oil stocks are plentiful as 1931 gets under way and the market position is weak.

Red and Pale Oils

Stable markets for these industrial oils prevailed, and the local market went through 1930 with but one price change, a quarter cent reduction on 25 pale paraffin oil during the second quarter.

Industrial demand for these oils was not up to previous levels, but competition was but moderate and leading sellers experienced no difficulty in maintaining price schedules on the bulk of their business.

Contracts for 1931 have been made in fair volume, and the market is in stable position.

Paraffin Wax

Continued overproduction of refined paraffin wax reacted against the price basis for the various grades during 1930, and selling prices were uniformly under 1929 levels.

It was a buyers' market virtually throughout the entire year, and consumers who normally contract for their requirements three to six months ahead were in many instances confining their operations to spot purchases.

The statistical position of the market is unfavorable as 1931 gets under way, and the price outlook for the first quarter shows little promise of improvement.

Petrolatum

Lower production costs incidental to cheaper crude petroleum brought about fractional price recessions in petrolatum prices during 1930, but the market, on the whole, was fairly stable.

Consumption of petrolatum has been well maintained, and with a good volume of contract business on their books for 1931 producers look for a fairly stable market during the year just getting under way.

Cylinder Oil

The market for cylinder oils showed considerable weakness and the market closed 1930 with prices substantially under those in effect at the start of the year, and with refinery holdings as of December 31 considerably in excess of those on hand at the beginning of 1930. The price range for the year, with comparison with the previous year, follows:

	Cents per gallon									
	Jan. 1		Apr. 1		July 1		Oct. 1		Dec. 1	
	1930	1929	1930	1929	1930	1929	1930	1929	1930	1929
600 steam refined	.31	.30	.31	.32	.22	.42	.16½	.28	.16½	.31
625 steam refined	.33	.31	.33	.35	.24	.44	.18½	.31	.18½	.34
650 steam refined	.37	.34	.37	.39	.28	.49	.22½	.35	.23	.38
600 Pennsylvania Flash	.40	.38	.39	.43	.33	.52	.28	.42	.23½	.41
630 Pennsylvania Flash	.44	.42	.42	.48	.36	.57	.31	.46	.29½	.45
600 Warren E	.40	.35	.38½	.35½	.32	.44	.24	.40	.23	.40
600 Oil City E	.39	.34	.37½	.34½	.31	.44	.23	.39	.22	.39
Light 140-150 bright stock	.52	.46	.48	.50	.37	.60	.29	.60	.26	.53
Dark 140-150 bright stock	.50	.44	.47	.49	.35	.59	.27	.58	.24	.50

Selling pressure is not absent as the market goes into 1931, but a decidedly better sentiment is in evidence, and the trade is looking for an improved market basis before the conclusion of the first quarter.

PRODUCTION INCREASED IN CANADA IN 1930

(Continued from Page 154)

paratively little activity in the eastern gas fields of the Wentworth-Welland-Haldimand area. One wildcat test is reported drilling at Thorndale, near London, and another in Grey County.

Turner Valley Field

In Alberta, the Turner Valley Field continues to be the dominant factor in production. Though drilling operations were not so intensive as in 1929, and a number of tests forecasted for 1930 failed to materialize, the actual production for the year just closed showed a marked increase. Figures of pipe line runs for 1929 and 1930 are as follows, in barrels per month:

Month—	1929 Bbls.	1930 Bbls.
January	38,501	88,986
February	41,349	78,319
March	56,701	105,836
April	69,207	87,277
May	88,302	84,044
June	92,122	111,989
July	91,340	95,884
August	93,299	110,801
September	89,020	112,561
October	102,466	144,021
November	99,369	132,287
December	90,625	160,725
Totals	952,301	1,312,706

The pipe line runs do not represent the entire production, as considerable crude

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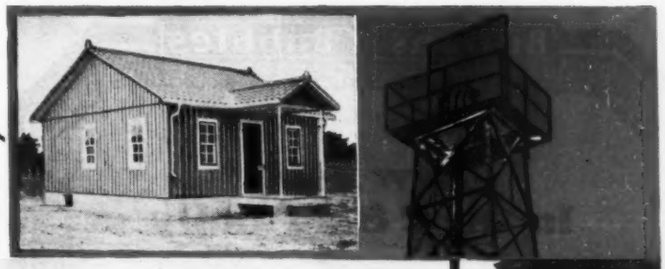

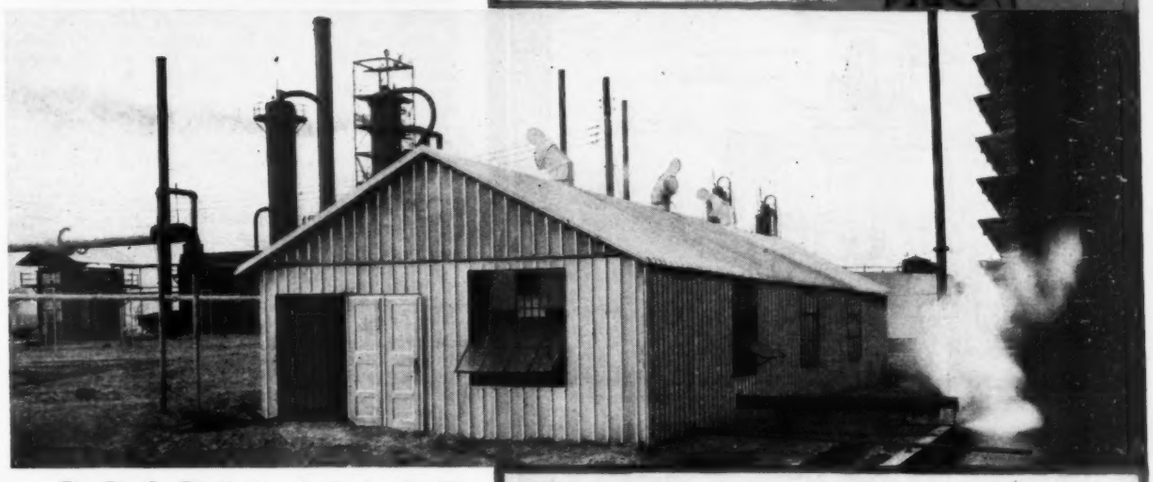

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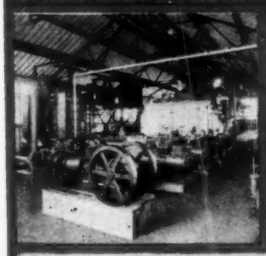

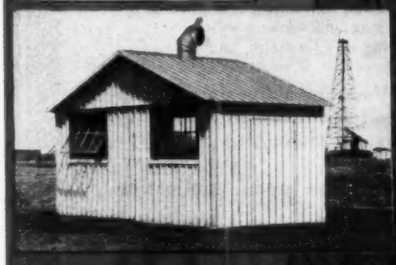

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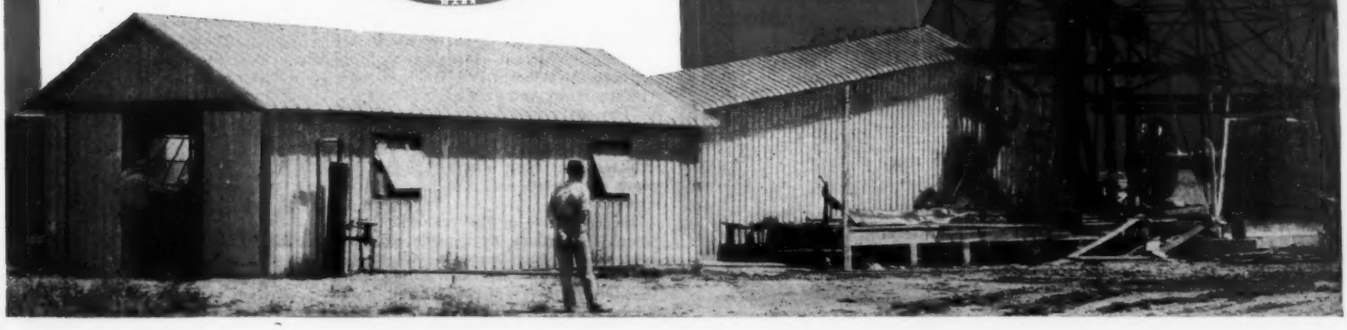

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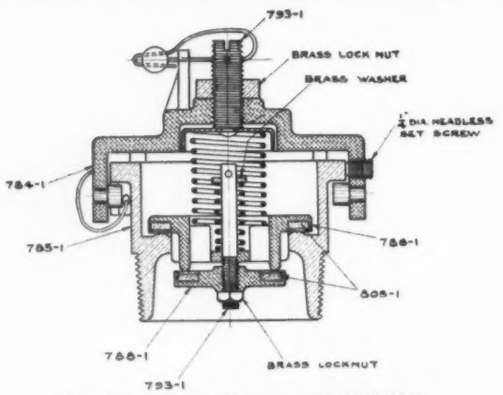

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naphtha is sold in the field to local purchasers. The year 1930, it may be noted, is the first year in which the Alberta production has exceeded 1,000,000 bbls. The Alberta production for the year is larger than the previous record production for all Canada.

The outstanding feature of the 1930 development in the Turner Valley Field was the marked extension, in the concluding months, of the South Turner Valley producing area. In the year just closed the proven area was extended southeast along the structure, through Sections 17 and 16, in Township 19-2w5, while important new production was opened still further southeast, in Section 4. Production has since been secured in Section 9, intervening between 17 and 4; and northeast of the Home section a link with the central field has been proven by the securing of one producer in Section 29. The result of these operations is a material extension of the proven field to the southeast. Production has been, in fact, secured as far south as the Sterling Pacific well in Section 34-18-2w5. This, however, was a small producer; but in Section 4, Mercury's No. 1, and in Section 16, East Crest's No. 2-A, have been among the largest producers yet drilled in the field. These big wells, with initial production between 600 and 900 bbls. have contributed materially to the increased aggregate for Turner Valley in the past year and have offset a considerable decline in the older producing areas.

The South Turner Valley has been both the major producing area and the major area of new development in 1930; and the results secured there have stimulated considerable new work which will be a factor in the 1931 figures. In the Central Turner Valley, the year's activity was chiefly along the line of completing tests already started or deepening and shooting old producers. The latter work, initiated by Imperial Oil, Ltd., has also been taken up by other companies. The shooting of wells of small initial production in the deep lime has in some cases been attended by remarkable increase in production, though this is more evident in the new areas of South Turner Valley than in the older central field. Several new tests were started in the central Field.

On the other hand, the North Turner Valley area has been decidedly inactive. The year saw the completion of one good producer, Model Oils' No. 1, in the deep lime, with a peak production around 180 bbls. a day; the definite abandonment of several other tests, including Invader Petroleums' No. 1 in the far northern end of the field; and the shutting down of the majority of the tests which were drilling in 1929. At the close of 1930, only one test was drilling in the North Turner Valley area.

In the course of 1930, in the entire Turner Valley Field, approximately 40 wells were completed, ranging from small wells of 10 to 20 bbls. to Mercury's No. 1 which had a peak record of over 900 bbls. At the close of 1930 the Turner Valley situation may be summarized as follows:

	Drilling	Producing	Shut down	Abd.
North Turner Valley	1	5	7	6
Central Turner Valley	10	35	19	10
South Turner Valley	16	23	10	3
Total	27	63	26	19

Red Coulee Field

In the international Red Coulee Field, the first production was secured in the Vanalta Oils' No. 1 discovery well late in 1929. Numerous locations were made on both the Alberta and Montana ends of the structure, and drilling was very active in the early months of 1930. The best results were undoubtedly secured on the Montana end of the structure, but on the Alberta end four commercial producers were completed and are now delivering crude oil.

In the course of the year's operations, some 43 locations were made on the Alberta end of the structure. Of these, 12 reached the stage of actual drilling. Three, in addition to the discovery well, secured production, averaging around 220 bbls. a day for the field; four have been definitely abandoned; four are shut down, and one started drilling late in 1930.

The field is notable as the first commercial field of crude oil developed in Alberta, as distinguished from the light crudes and naphthas of the Turner Valley and the heavy crudes of the Skiff, Wainwright and Ribstone areas. It thus gives some encouragement for further testing of the border areas in Alberta for extensions to the north of the Montana producing areas.

East Central Alberta

In east central Alberta, the Ribstone Field came to the front in 1930 through the completion of three fair producers of heavy crude. The discovery well, Meridian Oils' No. 1, was drilled in 1929; and since then two wells drilled for the Meridian company and a test in which the Meridian and Imperial Oil companies are jointly interested have secured production. So far, regular shipments have not been made, and the development of the field as an important producing factor seems to depend on the securing of a satisfactory market for the heavy crude. Production is secured around 1,900 feet, and the wells appear to be better producers than those of the Wainwright Field, their individual production being estimated from 100 to 400 bbls.

The structure is, according to the report of Dr. G. S. Hume of the Geological Survey of Canada, an extensive one, favorable to both gas and oil. Since the Hume report some 16 tests were located. Three wells have been abandoned, three are listed as shut down, one is drilling and one new location has recently been made. The field probably extends across the provincial boundary into western Saskatchewan.

Farther west, an important new gas field has been opened near Kinsella. This is apparently an extension of the Viking and Wainwright gas areas. Duluth Syndicate's No. 1 well blew into production late in 1929 and was definitely completed early in 1930 with an open flow of 21,000,000 feet a day. No further drilling has been carried on there, but if arrangements can be completed for marketing the production in Saskatchewan, intensive drilling will be undertaken this year.

Operations in the Foothills

In the Alberta foothills, at the close of 1930, a test on the Moose Dome was drilling in the Devonian lime; another on the Herron structure was working in the Madison; the Waite Valley had one test drilling, one abandoned and six shut down; and in the Pincher Creek area one was working on the Mill Creek structure and another on Yarrow Creek. On the High River-Aldersyde structure, representing one of the outermost folds of the foothills, Ranchmen's Oil & Gas Co.'s No. 1 is drilling close to 4,600 feet.

Border Fields

In the Southern Alberta border areas, some heavy crude production was taken from the Skiff Field in 1930. Dauntless Oils' No. 1 and Devenish Petroleums' No. 4 were drilled in the same area, but failed to get commercial production. The field has two or three potential producers of heavy crude.

The most important development in the southern fields outside of Red Coulee was the arrangement for exporting gas from the Rogers-Imperial structure to Montana. Completion of the pipe line opened a market for gas from other border areas in Alberta; and will inevitably stimulate new drilling.

In the Cypress Hills area, a second test by the Eagle Butte Oil Co. was abandoned at considerable depth. Further west, Madison Oils' No. 2 recently resumed work on the Beaver Dome. In the Taber district, the Cole-English Syndicate's No. 1 was abandoned at 3,303 feet.

On the other hand, two important new wildcat tests have been started. One is the joint test of Texas Oil Co. and Imperial Oil, Ltd., near Lethbridge; and the other is the Alberta Pacific Consolidated test at Spring Coulee, which has already reached 5,000 feet. In the Milk River district, Commonwealth Petroleums, Ltd., has a test drilling around 4,800 feet; and Anglo-Western Oils, backed by British capital, has started a test.

North of Edmonton, a wildcat test by

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Alberta Pacific Consolidated Oils, Ltd., on acreage of the Canadian Exploration Co. on the Duvernay structure was abandoned at 2,417 feet.

In the course of the year, the Hudson's Bay Oil & Gas Co. carried on several tests. Two, at Paintearth Creek in the Castor area and at Keho Lake in southern Alberta, are still drilling; one, on the Highwood structure, is shut down; and the second of two tests in the Lomond district has been abandoned.

Some attention was attracted early in the year by the report of high grade crude in a deep test by Fuego Oils, Ltd., near Oyen; but the well has not yet been put on a marketing basis.

Manitoba Drilling

Relatively little drilling took place in Manitoba in 1930. A test in the Dauphin district of northern Manitoba is reported to have developed a small crude production. In the Manitou district, southern Manitoba, Commonwealth Petroleums, Ltd., of Calgary, is drilling.

British Columbia

In British Columbia, there was a decided renewal of drilling activity. In the Sage Creek district, where light crude was reported struck in 1929, little further work seems to have been done, though several new locations were reported. International Pipe Line Co. launched an active development campaign, securing shows of gas in two tests near Steveston; and is taking over the development of the Sumas Prairie area, where gas shows have also been encountered. Several new tests are drilling in the southern part of the province; and the Peace River Block in northern British Columbia, now under provincial control, is likely to be tested next year as a result of encouraging geological reports.

MT. PLEASANT PASSED MUSKEGON LAST YEAR

(Continued from Page 156)

Mount Pleasant wells showed a better record dropping from about 100 bbls. a well on January 1, 1930, to about 35 bbls. a well one year later.

Production of the Muskegon Field dropped from 6,000 bbls. at the first of 1930 to about 2,000 bbls. on January 1, 1931, while Mount Pleasant remained practically the same at 7,000 bbls. a day both at the beginning and end of the year.

Drop in Financial Returns

Financial returns for Michigan oil showed a considerable decrease per barrel because of generally lower crude prices.

The aggregate revenue for the two fields in 1929 exceeded $6,000,000 at an average of $1.36 a barrel for an aggregate production of 4,500,000 bbls.

The average price paid for natural gas in the Muskegon Field, the only area where it has been sold for commercial purposes in Michigan as yet, increased during 1930 from 8 to about 12 cents per 1,000 cubic feet at the well because of the dwindling production and the continued demand for the product.

The total production of 3,500,000,000 feet in 1929, therefore, brought the operators an aggregate income of about $280,000. As compared with this the 1930 production of 1,750,000,000 feet showed a decrease in revenue of only about 25 per cent for a total of $210,000.

The Year's Developments

The outstanding new development in the proved field during the year was the drilling of the first deep test by the Muskegon Deep Well Syndicate. An old Dundee gas well of the Muskegon Oil Corp. high on structure in the Muskegon Township area of the field was deepened from a depth of 2,050 to 4,575 feet in the last three months of the year. It failed to develop any new production in the Monroe, Niagara, Salina or Trenton formations and struck bottom water in the Trenton at 4,575 feet just as the year closed.

It has not yet been determined whether the well will be continued or abandoned although Muskegon operators are still convinced that the future of the field lies in the deeper formations. One other well on the edge of the field which failed to strike production in the Niagara formation at a total depth of 3,750 feet is the only other deep well that has been drilled in Muskegon or Laketon Townships, where the proved Muskegon Field is located.

Mount Pleasant Area

Operations in the Mount Pleasant area centered in nearby wildcat territories within a radius of 15 miles from the original proved field.

As a result three new gas areas and two oil producing areas, most important of which was the Leaton Pool, were opened. Other drilling operations included development of acreage in the original field practically proved before the opening of the year.

The Leaton Pool was opened in June by the New York Petroleum Royalty Co. whose No. 1 P. J. Marthey well, SW SW SE, Section 19-15n-3w, Denver Township, Isabella County, came in for 540 bbls. a day initial production as the discovery well.

None of the 18 wells which had been completed in the pool at the close of the year exceeded the No. 1 Marthey in initial production although the pool was producing about 1,000 bbls. a day as of January 1, 1931.

The largest of eight oil wells in the Vernon-Isabella Township Pool, a small area located between Leaton and the original Mount Pleasant Field, started out at the rate of 350 bbls. a day but later went to water. Recent developments in this area have been rather discouraging.

The most important of the three new gas areas opened near the Mount Pleasant Field during the year is the Broomfield Township area 14 miles due west of the proved field. Six gas wells in a sand encountered just above the Marshall formation at a depth of about 1,300 feet have an estimated open flow capacity of about 25,000,000 feet a day.

New Gas Production

Four Clare County gassers completed during the year range from 500,000 to 3,500,000 feet a day in initial production but have not yet reached the point where they are particularly interesting for commercial production.

The Broomfield Township wells range from 1,000,000 to as high as 10,000,000 feet a day initial open flow capacity. Three gas wells in the Vernon-Isabella Township area are comparatively small but indicate that there is a considerable area in the vicinity of the city of Mount Pleasant that is underlaid with gas in the Marshall at 1,300 to 1,400 feet deep.

MICHIGAN FIELDS
Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas	Abd.
January	23	4,955	5	0	0
February	28	2,543	10	3	0
March	17	1,770	3	0	0
April	35	2,164	16	2	2
May	28	1,020	16	3	6
June	20	3,321	4	1	2
July	21	2,180	9	1	0
August	20	1,274	5	2	2
September	34	3,685	13	3	1
October	23	1,180	10	5	1
November	32	1,347	18	4	0
December	14	290	6	5	2
Total 1930	295	25,729	115	29	16

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Abd.
Muskegon	34	864	7	7	16
Isabella	143	18,909	29	11	0
Midland	23	5,484	4	0	0
Ottawa	4	0	3	1	0
Oceana	6	0	6	0	0
Newaygo	6	0	5	1	0
Clare	11	0	7	4	0
Saginaw	6	67	3	0	0
Montcalm	3	0	3	0	0
Alpena	1	0	1	0	0
Ingham	2	0	2	0	0
Monroe	4	115	3	0	0
Allegan	4	0	4	0	0
Livingston	4	0	3	1	0
Mason	1	0	0	1	0
Kent	1	0	1	0	0
Cass	6	30	4	0	0
Kalkasky	2	0	2	0	0
Gratiot	5	250	4	0	0
Manistee	7	0	4	3	0
Lake	2	0	2	0	0
Van Buren	2	0	2	0	0
Berrien	4	0	4	0	0
Shiawassee	1	10	0	0	0
Calhoun	2	0	2	0	0
Branch	1	0	1	0	0
Presque Isle	1	0	1	0	0
Barry	1	0	1	0	0
Wexford	1	0	1	0	0
Iosco	1	0	1	0	0
Mecosta	2	0	2	0	0
Bay	1	0	1	0	0
Lenawee	1	0	1	0	0
Osceola	1	0	1	0	0
St. Clair	1	0	1	0	0
Total	295	25,729	115	29	16

MAY BE THE WORLD'S LARGEST OIL FIELD

(Continued from Page 106)

over 190 oil wells in the field, proration holding production down to 27,500 bbls. per day, the Pure-Van Pipe Line Co. running 17,500 bbls. of this amount through its 10-inch line to Smiths Bluff on the Gulf Coast and the Humble Oil & Refining Co. running 10,000 bbls. per day through its 10-inch line. The former line was completed the middle of 1930, extending on from the short 10-inch line which was formerly laid to a loading rack at Chandler.

The Pure Oil Co., the operating company of the Van Joint Account in which the Shell Petroleum Corp., Pure Oil Co., Sun Oil Co., The Texas Company and Humble Oil & Refining Co. have acreage, has carried on all operations in the 5,000-acre block which makes up the Joint Account, and completed a gasoline plant in the field in September, utilizing the gas from the majority of the wells in the field, shipping the gasoline out to its refinery at Smiths Bluff by tank cars.

The Humble Oil & Refining Co. extended the field approximately 2 miles to the northeast the fore part of the year by the completion of its No. 1 Carroll on a 95-acre tract in the William Daniel Survey. Since the completion of that well, which is outside of the Joint Account, many wells have been drilled on leases between it and the account. Page 95, of the December 11 issue of The Oil and Gas Journal shows acreage contained in the Van Joint Account and acreage in the Carroll district to the east which has been proven by production. The entire pool now extends about 2 miles wide and 4 miles in length from northeast to southwest, and is being extended to the south and southwest by late wells. Dry holes define it to the north, west, northwest and east.

Potential production of the Van Pool from 190 wells is rated at over 375,000 bbls. per day through eleven-sixteenths-inch choke, practically all wells producing through this size choke.

EAST CENTRAL TEXAS
Summary of Wells Completed in 1930

County—	Comp.	Prod.	Abd.	Gas
Anderson	21	2,311	14	5
Angelina	2	0	2	0
Burleson	1	0	1	0
Camp	1	0	1	0
Cherokee	2	0	2	0
Delta	4	0	4	0
Ellis	1	0	1	0
Fannin	1	0	1	0
Freestone	6	0	6	0
Grimes	3	0	3	0
Henderson	10	0	10	0
Hill	5	0	5	0
Hopkins	2	0	2	0
Hunt	2	0	2	0
Kaufman	1	0	1	0
Lamar	1	0	1	0
Leon	1	0	1	0
Limestone	14	71	11	0
Madison	1	0	1	0
McLennan	2	0	2	0
Milam	2	200	1	0
Morris	1	0	1	0
Navarro	9	55	7	0
Rains	2	0	2	0
Robertson	2	0	2	0
Rusk	8	15,560	5	0
San Augustine	1	0	1	0
Smith	6	0	6	0
Upshur	1	0	1	0
Van Zandt	199	618,153	27	1
Woods	8	6	8	0
Total	320	636,650	132	6
Total 1929	159	11,424	136	6
Difference	161	625,226	4	0

COMPLETIONS BY MONTHS

Month—	Comp.	Prod.	Abd.	Gas
January	10	475	7	0
February	4	5,230	0	0
March	29	9,406	19	3
April	15	25,000	6	0
May	50	53,057	23	1
June	26	65,000	12	0
July	27	70,551	8	0
August	30	101,330	9	2
September	25	17,198	9	0
October	47	107,031	16	6
November	36	74,302	18	0
December	21	108,070	5	0
Total	320	636,650	132	6

REGISTERED IN CANADA

CHATHAM, Ontario, Jan. 24.—The Texas Company of Canada, Ltd., has been registered under the companies act in Alberta. The authorized capital is 4,000 no par shares and C. D. Maltabarger of Calgary is named as attorney for the company.

ENGINE DESIGN AND OPERATION ARE FACTORS

(Continued from Page 210)

tube that was attached to the crankshaft and that passed a stationary protractor insulated from the ground and connected to the high tension terminal of the spark plug. For the carburetor settings samples of the exhaust gases were taken at different settings during tests and the carbon dioxide was determined to estimate approximately the magnitude of the effect of unit changes in carburetor setting upon the air-fuel ratio.

Carburetor Setting

Experiments were made to determine the effect of carburetor setting and of spark timing respectively upon the comparison of a gasoline containing benzene with the same gasoline containing lead tetraethyl, the object being to determine concentration of lead tetraethyl in gasoline which would be equivalent in anti-knock effect to 40 per cent of benzene in gasoline at various carburetor settings and spark timings. The composition of the exhaust gases was not appreciably affected by changes in spark timing.

It was found that with the carburetor setting for maximum knock and at a spark timing of 7½ degrees before top dead-center, 40 per cent of benzene in gasoline would give the same bouncing pin readings as about 3.4 cc. of lead tetraethyl per gallon in the same gasoline, while with a spark setting of 37½ degrees before top dead-center the same mixture of 40 per cent of benzene in gasoline was equivalent to as much as 6.0 cc. of lead tetraethyl per gallon at a carburetor setting corresponding at about 15 pounds of air per pound of fuel, and only as much as 4.8 cc. of tetraethyl lead per gallon at a carburetor setting corresponding to 13 pounds of air per pound of fuel.

The carburetor setting and spark timing most suitable for a standard method of rating fuels for knock, it is concluded, is as follows: With respect to the carburetor adjustment the setting for maximum knock is probably most suitable, because (1) the adjustment is definite and can be reproduced; (2) it is an adjustment that can be made by the same instrumentation as is used for making the knock rating itself, and (3) the carburetor setting for maximum knock is a practical one because it lies within the range of ordinary engine operation. In respect to spark timing maximum power is recommended.

DIRECTORS OF INSTITUTE APPROVE ROAD EXPANSION

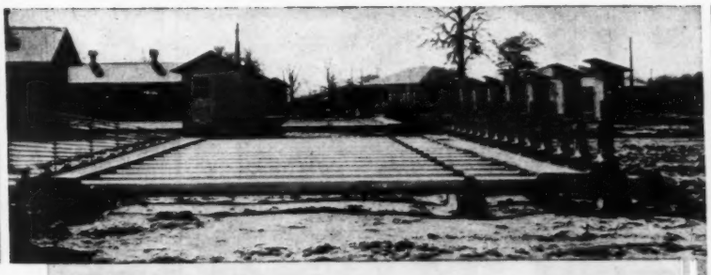
Preparation and prosecution of a national legislative program designed to meet demands both for relief of unemployment and expansion of the nation's highway system are approved in a resolution adopted by the board of directors of the American Petroleum Institute.

The resolution, similar in scope to one adopted by directors of the National Automobile Chamber of Commerce, recommends construction and improvement of both main and secondary highways by providing temporary loans to states from the federal treasury, making further appropriations under the Federal Aid Highway Act and removing the present federal aid highway participation limit of $15,000 per mile.

Reports showing production of "cracked" gasoline in United States refineries hereafter will be made public weekly by the institute in connection with the organization's established reports covering crude oil production, gasoline stocks, crude runs to stills, etc. The "cracked" gasoline production figures will be given by refinery districts, and companies owning 86 per cent of the country's total charging capacity now are reporting to the institute.

It is expected the institute shortly will begin publication of weekly reports showing stocks of gasoline at bulk terminals and in transit. Collection of these data by the department of statistics has been authorized by the board of directors. The new report will enlarge the picture of gasoline stocks now provided by weekly reports of stocks at refineries.

CHIEF ADVISOR



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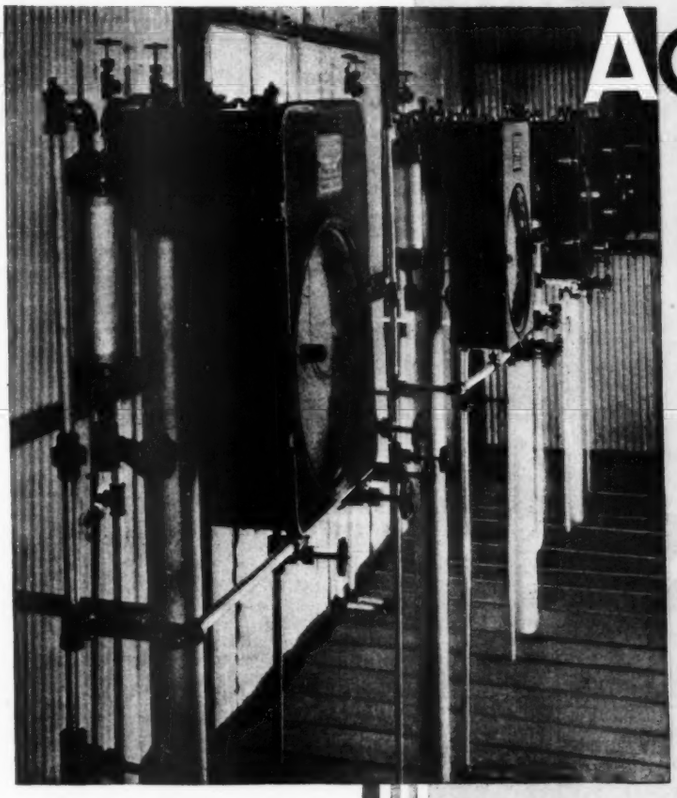

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This new Alto Meter Station bears a large and important responsibility. Through seventy-six Westcott Meters, it measures all the gas which goes from Richland Parish to three major transmission lines: (1) The Interstate Natural Gas Company line from Fowler, La., to New Orleans extension at Baton Rouge, La.; (2) The Southern Natural Gas Corporation line from Louisiana to Atlanta; (3) The Mississippi River Fuel Corporation line from Louisiana to St. Louis.

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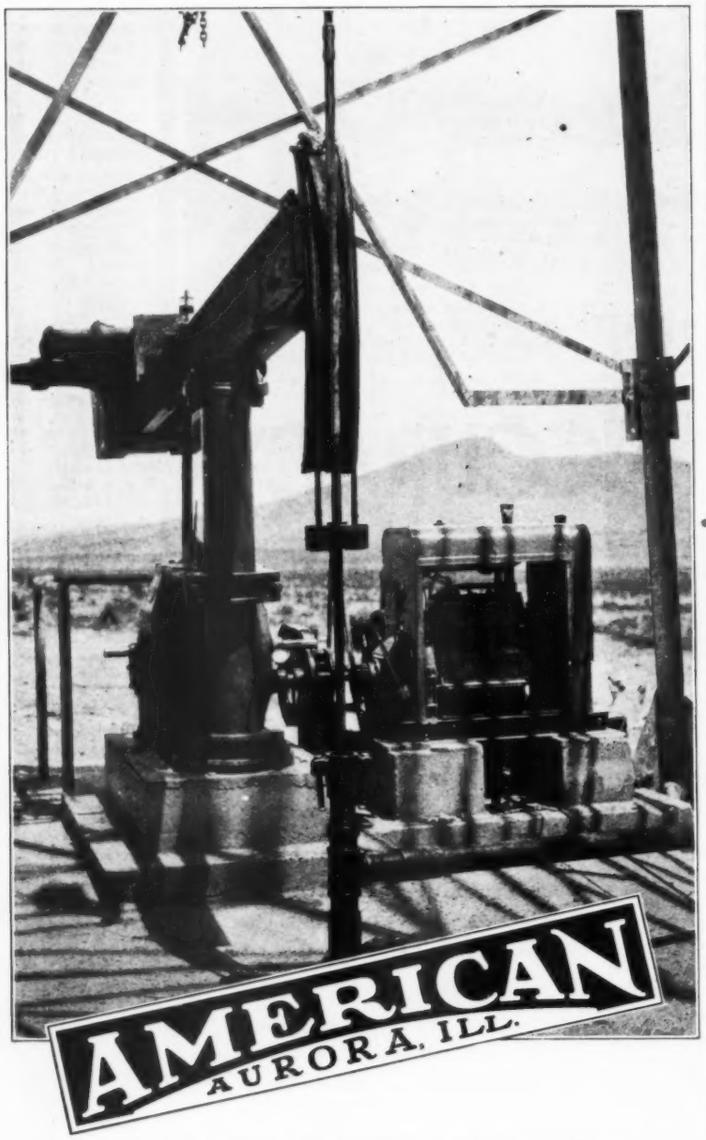

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CURTAILMENT HIT THE EASTERN FIELDS HARD

(Continued from Page 163)

gas reserves. But the general depression dampened that hope and with the closing down of many industrial plants for more than the usual seasonal periods, many of the old gas wells were forced to be shut in as well as most of the new ones. Some far-sighted operators, who could afford it, have added many wells to their reserve waiting for a market which is at present oversupplied. In West Virginia there have been many fair gas wells completed which have ranged in size from 1,000,000 to 8,000,000 feet a day, and in various counties. These wells have been completed in all sands from the Salt sand at 1,450 feet to the Injun sand at an average of 2,000 feet, and in the lower districts in the Brown shale at a depth of over 3,000 feet. There have been no large wells reported from deeper sands. In southwest Pennsylvania there were fewer gas wells completed and few large wells with the exception of two or three in the lower section and in Greene County. In southeast Ohio, there were slightly fewer gas wells and no new extensions were found. The old Summerfield gas pool in Marion Township, Noble County, was revived recently with the addition of a fair gas well.

EASTERN FIELDS
Summary of Work Completed in 1930 and 1929

Field—	1930 Comp.	1930 Prod.	1930 Dry	1930 Gas
Allegany	219	520	6	2
Bradford	1,583	2,362	0	2
Venango-Clarion	202	176	31	37
Middle Field	48	97	2	4
Butler-Armstrong	86	80	23	17
Southwest Pennsylvania	185	506	49	67
West Virginia	751	2,148	136	397
Southeast Ohio	800	14,553	191	141
Total	3,874	20,442	438	667

Field—	1929 Comp.	1929 Prod.	1929 Dry	1929 Gas
Allegany	406	832	1	0
Bradford	2,679	4,539	5	2
Venango-Clarion	454	689	24	45
Middle Field	70	189	2	1
Butler-Armstrong	168	213	39	17
Southwest Pennsylvania	232	1,459	32	100
West Virginia	881	3,899	132	379
Southeast Ohio	997	15,400	217	158
Total	5,887	27,220	452	702
Difference	2,013	6,778	14	35

GAS IN LOUISIANA LED IN IMPORTANCE

(Continued from Page 161)

from 2,847 feet it was listed as a 100-bbl. producer of 29 gravity oil, the crude having characteristics differing from those of any other crude found in this territory. It was Lenz' eighth attempt in Miller County and as the new year opens he is drilling two more on the same lease, one of them already below 4,000 feet, while the other is expected to be a producer at around its present depth of about 2,800 feet. There was some buying of protection after the discovery but no great rush on the part of major companies and very little more by individuals. At present there are eight operations under way, most of them shut down for one reason or another.

Gas in Franklin County

Franklin County was added to the list of those producing gas in north Central Arkansas as the chief development resulting from what activity there was in that area. Until Monroe and Richland begin to show an alarming decrease in production, which isn't likely to happen for a few years yet, it is probable that drilling will not be done on a large scale in this part of the country, though many major companies have extensive blocks on which they are paying rentals year after year. In Franklin, Johnson, Logan and Pope Counties, where gas has already been found, 11 wells were completed during the year, five of the producers having a total open flow of approximately 100,000,000 feet. One test in Cleburne and another in White County were failuures. The Franklin discovery well was Red Bank Oil Co.'s No. 1 Edtin in the SW NE, Section 33-10-26, a mile or so east of Ozark and several miles west of the Clarksville Field in Johnson County. It had tested 4,000,000 feet of gas at 3,750-59 feet but later it was decided to deepen it and during the last week of the year it was finished as an 8,500,000-foot producer, rock pressure 875 pounds, at 3,793 feet, the deepest producer in Arkansas.

Important Mergers

One notable feature of the year's developments was in the form of mergers of major companies operating in this territory. The first was the absorption by the Louisiana Gas & Fuel Co. of a number of smaller concerns operating in Monroe, Richland and other gas areas of the division and the later merger of this combination into the United Gas System. Later in the year Cities Service Co. acquired controlling interest in the Louisiana Oil Refining Corp. Through the United Gas System consolidations and mergers that organization came into possession of probably 90 per cent of production in the Monroe and Richland Gas Fields and its purchase in the Jackson, Miss., Field referred to, gives it a corresponding interest in that territory. The Cities Service-Louisiana trade brought together two of the largest refining and marketing and gas producing, transporting and marketing agencies in this part of the Mid-Continent. Marketing facilities for refined products are afforded by 154 bulk stations, 1,053 owned and controlled filling stations and over 4,000 dealers in Louisiana East Texas, Arkansas, Mississippi, Tennessee, Alabama and Oklahoma. Arkansas Natural Gas Corp., representing Cities Service in this territory, has 700 miles of main line in Arkansas, Louisiana and East Texas in addition to gathering systems in the several fields where it produces or buys gas and distributing systems in a majority of the 100 communities in the three states where its distributing subsidiary, Southern Cities Distributing Co., operates.

NORTH LOUISIANA
Summary of Wells Completed in 1930

	Comp.	Prod.	Dry	Gas*
Avoyelles	2	0	2	0
Bienville	8	0	4	4
Bossier	149	12,455	53	23
Caddo	71	2,512	18	7
Caldwell	1	0	1	0
Catahoula	4	0	4	0
Claiborne	8	0	3	3
Concordia	2	0	2	0
De Soto	43	7,652	32	11
East Carroll	1	0	0	1
Franklin	3	0	3	0
Jackson	1	0	1	0
La Salle	14	250	7	0
Lincoln	1	0	1	0
Morehouse	28	0	5	23
Natchitoches	3	0	3	0
Ouachita	50	0	7	43
Rapides	1	0	1	0
Red River	6	142	2	1
Richland	122	0	18	104
Sabine	155	30,989	90	6
Tensas	1	0	1	0
Union	29	0	1	28
Webster	40	1,257	15	3
West Carroll	3	0	3	0
Total 1930	746	55,257	279	254

Completions by Months

	Comp.	Prod.	Dry	Gas
January	48	517	14	26
February	40	8,994	11	13
March	57	6,905	22	10
April	74	4,735	26	13
May	67	5,821	25	21
June	94	5,346	41	35
July	85	11,719	25	32
August	70	1,723	29	33
September	63	1,426	23	18
October	52	2,814	20	23
November	53	2,861	26	13
December	43	2,396	17	15
Total 1930	746	55,257	279	254
Total 1929	612	29,549	184	281
Difference	134	25,708	95	27

*Gas production: Bienville, 49,406,000; Bossier, 234,076,000; Caddo, 58,896,000; Claiborne, 142,137,803; Concordia, 3,000,000; De Soto, 30,000,000; East Carroll, 47,883,000; Morehouse, 371,525,547; Ouachita, 317,023,470; Red River, 3,500,000; Richland, 3,260,892,240; Sabine, 67,800,000; Tensas, 19,200,000; Union, 114,628,029; Webster, 36,146,000; total, 1,756,108,089 feet. Last year, 3,409,139,331; increase, 1,346,968,755.

EAST TEXAS
Summary of Wells Completed in 1930

	Comp.	Prod.	Dry	Gas*
Bowie	1	0	1	0
Camp	1	0	1	0
Cass	1	0	1	0
Harrison	1	0	0	1
Marion	2	0	2	0
Panola	29	0	1	28
Red River	1	0	1	0
Shelby	1	0	1	0
Total 1930	37	0	8	29

(Continued on Next Page)

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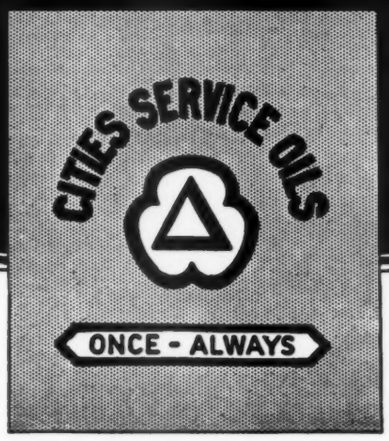

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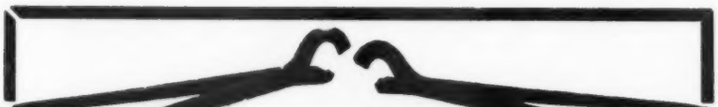

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Completions by Months

	Comp.	Prod.	Dry	Gas
January	5	0	2	3
February	2	0	0	2
March	3	0	0	3
April	5	0	0	5
May	2	0	0	2
June	6	0	2	4
July	0	0	0	0
August	1	0	0	1
September	3	0	1	2
October	2	0	1	1
November	3	0	1	2
December	5	0	1	4
Total 1930	37	0	8	29
Total 1929	98	190	21	74
Difference	61	190	13	45

*Gas production: Harrison, 5,514,000; Panola, 156,487,000; total, 162,001,000 feet. Last year, 280,342,000; decrease, 118,341,000.

ARKANSAS
Summary of Wells Completed in 1930

	Comp.	Prod.	Dry	Gas*
Ashley	2	0	2	0
Calhoun	1	0	1	0
Clark	1	0	1	0
Clay	1	0	1	0
Cleburn	1	0	1	0
Columbia	4	0	4	0
Drew	1	0	1	0
Franklin	1	0	0	1
Grant	1	0	1	0
Johnson	4	0	2	2
Little River	1	0	1	0
Logan	1	0	1	0
Madison	2	0	2	0
Miller	2	100	1	0
Nevada	1	0	1	0
Ouachita	28	644	11	0
Phillips	1	0	1	0
Pike	1	0	1	0
Pope	5	0	3	2
Prairie	1	0	1	0
Sebastian	8	0	2	6
St. Francis	1	0	1	0
Union	56	5,470	27	1
Washington	1	0	1	0
White	1	0	1	0
Total 1930	127	6,214	69	12

Completions by Months

	Comp.	Prod.	Dry	Gas
January	12	711	6	0
February	7	181	4	0
March	11	265	6	0
April	16	1,085	9	1
May	7	37	5	0
June	14	72	9	2
July	12	198	7	1
August	9	670	4	1
September	12	505	7	0
October	7	910	4	2
November	8	115	4	2
December	12	1,465	4	3
Total 1930	127	6,214	69	12
Total 1929	245	19,593	123	19
Difference	118	13,379	54	7

*Gas production: Franklin, 6,500,000; Johnson, 46,000,000; Pope, 43,347,000; Sebastian, 21,900,000; Union, 72,500,000; total 190,247,000 feet. Last year, 395,277,440; decrease, 205,030,440.

MISSISSIPPI
Summary of Wells Completed in 1930

	Comp.	Prod.	Dry	Gas*
Adams	1	0	1	0
Alcorn	1	0	1	0
Attala	1	0	1	0
Lauderdale	1	0	1	0
Lincoln	1	0	1	0
Madison	1	0	1	0
Monroe	1	0	1	0
Hinds	31	100	14	16
Rankin	17	0	2	15
Warren	1	0	1	0
Wilkinson	1	0	1	0
Yalobusha	2	0	2	0
Yazoo	1	0	1	0
Total 1930	60	100	28	31

Completions by Months

	Comp.	Prod.	Dry	Gas
January	2	0	2	0
February	0	0	0	0
March	0	0	0	0
April	1	0	0	1
May	2	0	1	1
June	1	0	1	0
July	9	0	3	6
August	7	0	3	4
September	13	0	7	6
October	6	0	3	3
November	10	0	4	6
December	9	100	4	4
Total 1930	60	100	28	31
Total 1929	23	0	22	1
Difference	37	100	6	30

*Gas production: Hinds, 338,374,190; Rankin, 603,000,000; total, 941,347,190 feet. Last year, 600,000; increase, 940,747,190.

HOBBS POOL OF UNUSUAL IMPORTANCE DURING 1930

(Continued from Page 156)

2 Idaho Canning, NW SE, Section 33-9n-5w, in Payette County. The flow was estimated at 25,000,000 feet a day while it lasted. The well subsequently was drilled to 1,800 feet, but has not yet been completed. The Crystal Dome Oil Co.'s No. 1 Daniels, SW SW, Section 32-10n-4w, in the same county, struck a flow of 5,000,000 feet a day at a depth of 1,865 feet. The well was shut in at that depth. The California Co. drilled a test on the Meadow Creek Dome in Bonneville County in its No. 1 Sorensen, SE NW SW, Section 33-3n-41. It started in the Nuggett and drilled into the Tensleep at 3,780 feet. It was abandoned at this depth.

MONTANA

In Montana the year 1930 started with the Border Field on the Canadian-Montana boundary as the high light in the oil news. This field finds its oil at about 2,500 feet deep and extends over an area of about 8 square miles on both sides of the international boundary. The oil is of asphalt base with some sulphur content. The wells average from 50 to 250 bbls. and the pay is found in two sands, the Ellis and Vanalta. The main production to date has been found on the Montana side of the line. Two pipe lines are serving the field at present and the production is going to the Regina refinery of the Imperial Oil Co. and the Maple Leaf refinery at Coutts.

In Carbon County, the Ohio Oil Co. completed a gas well and an oil well during the past year. The gas is being taken into the lines of the Gallitin Gas Co. for sale in Billings and other towns and cities and the oil goes to Bridger for rail shipment to the refineries. The field proves to be a deep development. The wells find their production about a mile in depth and in the Frontier and Dakota sands. The gas is "sweet" with little or no sulphur and the oil is a very high grade crude with a gravity around 52.

Liberty County is credited with two new fields discovered the past year. The Beardsen Dome is showing for both gas and oil in commercial quantities, the pay being found about 2,600 feet, and while only two wells were put down there, a better market for crude or a demand for the gas will bring about further development.

In the same county, another strike was made during the last half of the year, when a wildcat on the Reserve Dome near Whitlash, found gas in commercial quantities and later had a showing of oil that appears to be commercial. This pay was found about 2,100 feet in the Sunburst sand and the oil showing in the Ellis Madison contact below.

In Glacier County, the Cut Bank gas field was quite active the past year. The Texas Co. and the O'Neil interests each found a commercial gas well there and other wildcatters are exploring the region for a radius of 10 miles with the Drumheller well as the center. Mr. Drumheller has stated that a line is being promoted to carry this gas to Spokane, Wash., and he has asked for a franchise for the City of Kalispell. The Producers & Refiners Corp. has secured leases in the area and expect to drill three wells to test their holdings.

In Toole County, the Black Gold Petroleum Co. appears to have discovered a new oil pool between the Sunburst Field and the Bearsden Dome. This discovery is on the Barthelote Dome and the well looks good for a 30-bbl. producer in the Sunburst sand about 2,500 feet and also shows for a commercial gasser.

In October the production of oil from the northern Montana fields became too heavy for the purchasers and the Ohio Oil Co. notified all producers in the Sunburst and Pondera Fields that prorating would commence. Shortly after this order went into effect, an association of oil operators in the Sunburst Field was formed and the plant of the Shelby Refining Co. and the Shelby Pipe Line Co. was taken over by the newly formed association. The refinery was then started up to refine the oil from the leases of the members of the association. About the close of the year, the refinery and pipe line were sold by the association to the Stellarene Oil & Refining Co. for $2,000,000.

UTAH
Summary of Wells Completed in 1930

County—	Comp.	Prod.	Dry	Gas
Grand	2	0	2	0
Kane	1	0	1	0
Carbon	1	0	0	1
Total, 1930	4	0	3	1
Total, 1929	8	0	8	0
Difference	4	0	5	1

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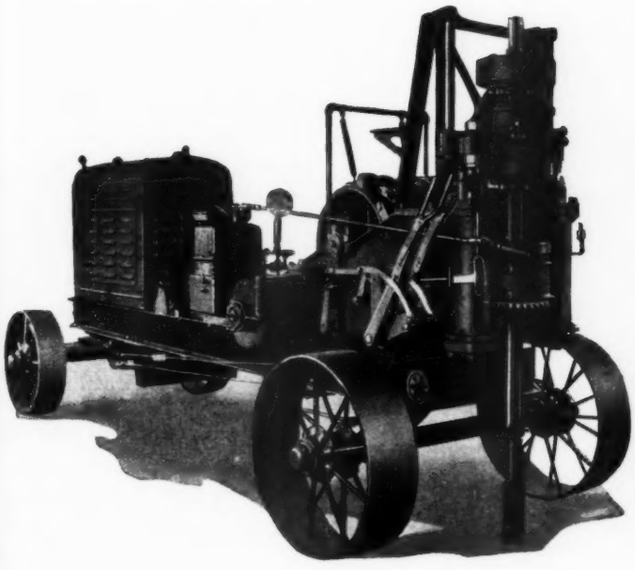
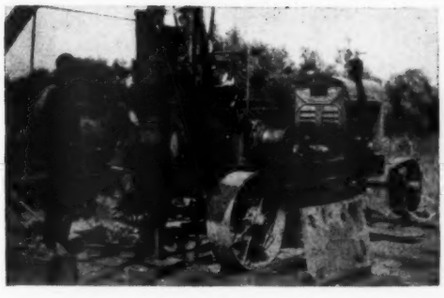
Rotary table drive and hydraulic feed combined



ROTACORE



Rotacore Structure Drilling in Kansas

OIL OPERATORS are always on the alert for changes and improvements which will eliminate waste time and increase the effectiveness of their structure drilling. Rotacore's big new feature accomplishing these results is the combination of rotary table drive with hydraulic feed, permitting immediate change from brake feed, as in rotary drilling, to hydraulic feed, as in diamond drilling! The change is quickly accomplished by loosening or tightening four chuck bolts, as required. Briefly, Rotacore combines principles of both diamond drill and rotary drill operation.

Consider the advantages of this quick change from brake feed to hydraulic feed: with brake feed the grief stem can be run in without continual rechucking, but if a hard layer is encountered, hydraulic pressure can be immediately applied by tightening the chuck bolts.

Rotacore's capacity is 3000 feet of N size hole, 2-13/16 inches in diameter, recovering 2-inch core. The hydraulic has a length of feed of 18 inches, and lifting capacity of 7 tons.

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A rotary table by means of which drill rods are rotated, is built in with recessed drive bushing through which passes a fluted or square grief stem coupled to the upper end of the rods. The grief stem can slip through the table while being rotated, the downward feed being controlled either by the hydraulic cylinders or by the cable from the drum.

All controls, including motor throttle, are at the operator's finger tips. A cat-head has been added in response to the necessities of field experience. The entire unit is mounted on a substantial steel truck with front wheels 8 inches and rear wheels 10 inches in width.

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Completions by Months

	Comp.	Prod.	Dry	Gas
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0
June	2	0	1	1
July	0	0	0	0
November	2	0	2	0
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
December	0	0	0	0
Total	4	0	3	1

NEW MEXICO

Summary of Wells Completed in 1930

County—	Comp.	Prod.	Dry	Gas
Chaves	1	0	1	0
De Baca	1	0	1	0
Eddy	25	546	11	6
Hidalgo	1	0	1	0
Lea	171	1,098,722	15	2
Sandoval	1	0	1	0
San Juan	5	0	2	3
San Miguel	1	0	1	0
Socorro	1	0	1	0
Valencia	2	0	2	0
Total, 1930	209	1,099,268	36	11
Total, 1929	119	13,065	71	16
Difference	90	1,086,203	35	5

Completions by Months

County—	Comp.	Prod.	Dry	Gas
January	13	6,045	5	0
February	11	13,980	3	2
March	11	2,451	5	0
April	10	211	5	4
May	6	72	4	0
June	5	8,735	0	1
July	22	122,695	1	1
August	18	123,138	3	0
September	28	197,724	4	0
October	39	237,593	4	1
November	24	223,550	0	1
December	22	163,074	2	1
Total	209	1,099,268	36	11

COLORADO

Summary of Wells Completed in 1930

County—	Comp.	Prod.	Dry	Gas
Arapahoe	1	0	1	0
Archuleta	1	0	0	1
Bent	1	0	1	0
Boulder	2	0	2	0
Douglas	1	0	1	0
Elbert	1	0	1	0
Fremont	22	445	15	0
Garfield	1	0	0	1
Huerfano	2	0	2	0
Jackson	2	0	2	0
Larimer	5	30	2	1
Las Animas	3	0	2	1
Moffat	8	492	2	3
Montezuma	2	0	0	2
Pueblo	1	0	1	0
Rio Blanco	3	2	1	1
Yuma	1	0	1	0
Total, 1930	57	969	34	10
Total, 1929	98	4,882	60	5
Difference	41	3,913	26	5

Completions by Months

	Comp.	Prod.	Dry	Gas
January	6	165	4	0
February	2	0	2	0
March	2	0	1	1
April	7	145	4	0
May	4	0	3	1
June	5	250	2	0
July	6	230	3	1
August	5	0	5	0
September	6	0	3	3
October	5	30	2	2
November	4	0	4	0
December	5	149	1	2
Total	57	969	34	10

WYOMING

Summary of Wells Completed in 1930

County-Dist.—	Comp.	Prod.	Dry	Gas
Salt Creek	14	6,383	0	0
Big Horn	5	3,500	1	2
Carbon	9	195	6	1
Converse	1	0	1	0
Fremont	9	404	2	3
Hot Springs	3	193	2	0
Johnson	1	0	1	0
Lincoln	2	0	2	0
Natrona	12	532	1	1
Niobrara	3	750	1	0
Park	19	2,773	5	3
Sweetwater	9	1,250	1	7
Sublet	8	455	0	0
Uinta	1	0	1	0
Washakie	1	0	1	0
Weston	55	7,624	10	0
Total, 1930	152	24,059	35	17
Total, 1929	135	34,872	44	9
Difference	17	10,813	9	8

Summary by Months

	Comp.	Prod.	Dry	Gas
January	11	941	2	1
February	7	2,795	2	2
March	3	1,664	0	0
April	8	325	2	1
May	5	135	3	0
June	22	2,436	1	1
July	15	1,853	6	0
August	20	1,704	6	1
September	18	2,625	2	5
October	19	4,415	3	3
November	10	2,129	2	2
December	14	3,037	6	1
Total	152	24,059	35	17

MONTANA

Summary of Wells Completed in 1930

District or County—	Comp.	Prod.	Dry	Gas
Kevin-Sunburst	86	1,268	30	13
Pondera	8	764	0	0
Bannatyne	5	40	1	0
Border Field	24	2,181	7	0
Fallon County	19	0	3	14
Toole County	7	0	5	1
Big Horn	6	0	0	0
Sweetgrass County	1	38	0	0
Garfield County	2	0	2	0
Chateau County	1	0	1	0
Liberty County	3	0	3	0
Rosebud County	1	0	0	1
Yellowstone C'unty	1	0	1	0
Galatin County	2	0	2	0
Teton County	2	0	2	0
Glacier County	2	0	0	2
Fergus County	4	0	4	0
Carbon County	2	1,500	1	0
Stillwater C'unty	2	0	2	0
Cascade County	1	0	1	0
Broadwater County	1	0	1	0
Madison County	1	0	1	0
Prairie County	1	0	1	0
Total, 1930	182	5,791	68	40
Total, 1929	373	11,829	94	26
Difference	191	6,038	26	14

Wells Completed by Months

	Comp.	Prod.	Dry	Gas
January	7	194	3	1
February	4	126	2	0
March	5	283	1	0
April	6	590	0	1
May	15	125	4	5
June	25	718	9	6
July	18	820	4	6
August	35	815	20	6
September	28	1,704	14	7
October	23	285	7	5
November	11	75	3	3
December	5	56	1	2
Total, 1930	182	5,791	68	40

KENTUCKY POOLS DEVELOPED SLOWLY

(Continued from Page 163)

There is no doubt that Kentucky could have exceeded its 1929 record by many thousands of barrels had there been any good reason for producing the oil.

KENTUCKY FIELDS

Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas
January	61	1,245	15	4
February	66	784	30	1
March	82	2,893	20	4
April	127	2,371	32	1
May	94	2,636	32	4
June	121	1,881	37	17
July	130	3,521	28	18
August	97	2,211	31	22
September	67	842	21	16
October	79	3,244	29	11
November	91	5,968	19	11
December	98	10,149	26	34
Total 1930	1,113	37,745	320	157
Total 1929	1,384	50,105	405	82
Difference	271	12,360	85	75

Completions by Counties

	Comp.	Prod.	Dry	Gas
Warren	25	110	14	0
Allen	1	200	0	0
Ohio	427	11,794	122	62
Daviess	178	4,329	62	9
Barren	15	29	3	9
Hancock	38	800	5	11
McLean	57	1,653	23	2
Henderson	122	1,183	39	14
Webster	4	0	0	4
Muhlenberg	13	420	2	5
Hopkins	2	0	1	1
Butler	1	0	1	0
Breckenridge	2	0	2	0
Union	2	80	1	0
Cumberland	5	65	2	1
Logan	1	0	1	0
Wayne	16	22	11	0
Powell	2	9	0	0
Christian	1	0	0	1
Estill	14	39	5	0
Morgan	1	2	0	0
Wolfe	2	1	1	0
Lee-Owsley	9	101	0	0
Lawrence-Johnson	27	179	0	0
Johnson-Magoffin	27	115	3	1
Clay	7	0	2	5
Jackson	3	0	2	1
Knox	3	0	0	3
Perry	1	0	0	1
McCreary	3	19	0	0
Metcalf	12	0	2	10
Bell	2	0	0	2
Pike	1	0	0	1
Greene	1	0	0	1
Hart	88	16,645	16	13
Total	1,113	37,745	320	157

TENNESSEE FIELDS

Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas
June	9	0	0	9
August	3	0	0	3
Total 1930	12	0	0	12
Total 1929	7	162	2	1
Difference	5	162	2	11

(Continued on Next Page)

Completions by Counties

	Comp.	Prod.	Dry	Gas
Smith	1	0	0	1
Dickson	1	0	0	1
Lincoln	1	0	0	1
Morgan	6	0	0	6
Putnam	2	0	0	2
Overton	2	0	0	2
Total	12	0	0	12

MISSOURI

Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas
January	1	0	1	0
May	1	0	1	0
July	1	0	1	0
August	3	0	3	0
October	1	0	1	0
December	1	0	1	0
Total 1930	8	0	8	0

Completions by Counties

	Comp.	Prod.	Dry	Gas
St. Louis	8	0	8	0

Imperial President Surveys Situation In Canada in 1930

By C. O. Stillman
President, Imperial Oil, Ltd.

In reviewing events in the Canadian petroleum industry for 1930 it is necessary to refer to conditions in the United States which are at once the world's largest producers and consumers of petroleum. For some years past overproduction of crude petroleum and its attendant evils of unnecessarily high operating charges and demoralized prices have prevailed in that country and it was inevitable that Canada should be affected, although she is among the least important of the world's oil producing countries.

The difficulty of the Canadian industry has been principally in the tendency of American refiners to look across the border to Canada as a field where they might convert their surplus stocks of products into badly needed cash. The tendency in this direction was more pronounced last year than ever. In fact, it is developed to such an extent that our Canadian refining industry faced a very critical situation. Owing to the great extent of our country and because of the very thin population over the greater part of it, which means, of course, a relatively small volume of business, there was no likelihood of the marketers of distress products from the United States operating far from our largest centers of population, but in these they had the Canadian refiner at a distinct disadvantage because, one man's meat being another man's poison, they were able to profit unduly by selling at prevailing Canadian prices products purchased in the distress markets in the United States at prices below actual cost.

Welcomed Tariff

It was a matter of genuine relief to the Canadian oil industry that in September last when the emergency session of Parliament enacted a number of tariff revisions, there was one among these which subjected the lighter grades of gasoline entering Canada from the United States (except casinghead gasoline imported for blending by refiners) to a customs duty of 2½ cents per gallon, thus restoring it to the position of 1922 before it was made duty free under the Fielding tariff. This customs duty was designed to protect the Canadian refiner against the distress prices in the United States, which, in many cases, were lower than the actual cost of making gasoline. The government required from the Canadian refiners an undertaking that consumer prices of gasoline in Canada would not be increased as a result of this customs duty, this being considered desirable as an assurance to the public, although, as Canada has ample refinery equipment to meet all her needs for gasoline, there was no likelihood that a duty on the finished product could affect the price of the Canadian product. It is interesting to note at this point that the price of gasoline has subsequently been reduced to the consumer, this reduction having been made possible by the falling market for crude oil in the United States.

It is a matter of fact that the Canadian refiner is in a position whereby he is earning only 2 cents on each gallon of crude oil processed. It will be seen, therefore, that any measures taken to insure a larger volume of business are of the utmost importance to him, for his investment in plants and equipment runs into several hundreds of millions of dollars.

Sales During Year

Speaking generally, sales of gasoline in Canada during 1929 were about equal to those of the preceding year and somewhat larger than sales during 1928. Fuel oil sales were slightly larger than during the previous year, but the market for fuel oil is such that it is being sold at prices lower than the laid-down cost of crude oil, so it will be apparent that this increased business will not be reflected in the profit sheets of the industry for the year. Incidentally, the increase in fuel oil sales is due altogether to its increased use for domestic heating purposes. Industry was a smaller consumer of fuel oil in 1930 than in 1929. The most marked fall-off in business during the past year was exterienced in industrial lubricants, a condition which reflects the lessened output of industry in Canada last year. It is worth noting, however, that industrial lubricants were in substantially larger demand than during the year 1927, so it is safe to assume that our business recession is not nearly as severe as, in moments of pessimism, we may incline to believe.

The principal problem faced by the Canadian petroleum industry during the past year was one of reducing its operating costs. It set out to do this without curtailing employment and by careful management attained its objective without reducing the purchasing power of its employes.

The outlook in 1931 is one which should occasion no alarm to well-established units of the industry in Canada. Of late there have been indications that the industry in the United States is at last beginning to put its house in order by adjusting production more nearly to the requirements of consumption. I do not believe that the problem of overproduction will be solved for a considerable time yet, but it is encouraging to note that some 31,000,000 bbls. of crude oil and products were taken from storage in the United States last year, which means that the agitation of the industry's leaders for rationalized production and conservation of the nation's petroleum resources is at last proving effective.

In Canada there is no danger of overproduction of petroleum products for we consume more oil in a week than we produce in a year. Nevertheless, we have been mindful of experiences in the United States and in our drilling and producing operations have adhered rigidly to the requirements of conservation. A notable step in this connection has been made in the repressuring of the Bow Island Field in Alberta into which we are now piping much of the surplus gas that is being produced in the Turner Valley. This gas is being forced into the sands where it is being stored in its natural containers for future use.

South American Production

Production of crude petroleum by Imperial Oil subsidiaries in Peru and Colombia totaled more than 25,000,000 bbls. during the first 10 months of the past year. Up to the end of October 103 wells were completed in Peru. These had an average initial production of 536 bbls. per day as compared with an average initial production of 670 bbls. per day for the 97 wells completed in Colombia. The initial production in Peru is very considerably larger than has ever previously been secured. The best showing previously made in Peru was an average initial production of 362 bbls. per day secured in 1925. In 1929 the average initial production of Peruvian wells drilled there by the company's subsidiary, International Petroleum, Ltd. was 146 bbls.

It may be well in these times of decreasing commodity costs to point out that gasoline, even before the business recession, was selling at prices substantially lower than prevailed before the war. In this it enjoyed a unique distinction. In August, 1929, before the current recession developed, the average price of gasoline in Canada was 95 per cent of the average price prevailing in December, 1913, and the average price today is 85 per cent of the pre-war price, whereas the average for 502 other commodities in common use is even now more than 25 per cent higher than the average of prices before the war. It is apparent from this that recession in prices of the industry's principal product is not a probability in the near future, and this is all the more evident in view of the fact already cited, that the industry today is earning only a scant 2 cents for each gallon of crude oil that it produces, transports, refines, distributes and delivers to the consumer in the form of finished products.

NEW SOUTHWEST TEXAS POOLS IN PAST YEAR

(Continued from Page 128)

at around 1,000 feet in depth. Both of these propositions are north of the Balcones Fault.

New Pool in Duval County

In northwestern Duval County, S. R. C. Oil Co. and Vacuum Oil Co. drilled the No. 1 Duval Ranch Land Co. in Survey 93 for an oil well, and a good one, starting off at around 300 bbls. daily at a total depth of 1,722 feet. The oil is 22 gravity. The well is in the center of a block of 10,000 acres of leases. In the development that followed a dry hole was drilled 600 feet southwest and another about the same distance east. Magnolia Petroleum Co. extended its pipe line to the well and has been taking the oil. The two dry holes have checked further development for the time but there may be a good oil pool to the north and northwest.

In eastern Bexar County Penn Oil Co. brought in the No. 1 Cooksey south of the town of Adkins, good for about 50 bbls. of oil at 1,450 feet. It is a pumper and produced from the Taylor Marl. The second attempt at production was drilled to the northeast and was a failure both in the Taylor Marl where the No. 1 Cooksey is producing and in the Edwards lime below that. Another location, however, has been made near the No. 1 Cooksey.

In the White Point-Saxet Field area west of Corpus Christi oil was found in both fields. In the White Point Field on the north side of Nueces Bay it was found in the Saxet Oil Co.'s No. 17 Rachel at 4,903 feet. The production was not large and there was a good big volume of gas. The test was drilled on down to 6,000 feet without finding additional production and has been plugged back and will be completed at the first sand.

On the south side of the bay in the Saxet Field oil production was found in the Saxet Oil Co.'s No. 6 Dunn at 4,304 feet. Gas production in both the White Point Field on the north side and in the Saxet Field on the south side is had at around 2,200 to 2,400 feet.

Late in the year Houston Oil Co. completed its No. 1 Comstock a mile east of production in the Agua Dulce Field in western Nueces County at 4,913 feet. Gas production in the field is at 2,000 feet. The No. 1 Comstock makes a pretty big volume of gas and about 30 bbls. of very high gravity oil.

In addition to the deep sand in the Saxet Field and the deep sand in the Agua Dulce Field the year 1930 saw a shallower sand opened in Nueces County a mile or so west of the Saxet Field when R. A. Thompson and others brought in the No. 1 Lawrence-Harrell at 1,659 feet. The discovery well is the No. 2 Lawrence-Harrell. The No. 1 found the sand but got away and ran wild and the hole was finally lost. Houston Oil Co. offset the No. 2 Lawrence-Harrell with its No. 1 Ran Morgan completed at 1,670 feet for about 20,000,000 feet of gas, which was about the same volume as the discovery well.

Gas Pool in Jim Wells

J. E. Walsh added Jim Wells County to the list of counties in Southwest Texas that have production when he completed his No. 1 Wade in the northeastern corner of the county at 2,916 feet with about 75,000,000 feet of gas, with some gasoline. This new pool is due south of the Cartwright gas field in Live Oak County, a distance of about 12 miles and with the Mathis gas field in San Patricio County located in between them. The Walsh well is getting the pay higher than in the Mathis Field and the completion of the first well seems to indicate that there is a probability of its being a nice big field.

Slick Pool in Goliad-DeWitt

One of the most important new discoveries is the T. B. Slick No. 1 Poetter on the Goliad-DeWitt County line about 20 miles northeast of the Pettus Field at 4,213 feet which filled 2,000 bbls. of storage with 48 gravity oil and was shut in to wait pipe line connection and a market outlet. It seems good for about 500 bbls. of oil daily and looks like the opening of a new and important oil pool.

Lion Field in Victoria

Lion Oil Refining Co. drilled the No. 1 McFadden in the southern part of Victoria County and got one of the biggest and nicest gas wells ever completed in the state. It was completed at 3,747 feet for 40,000,000 feet of gas. The No. 2 was drilled to a total of 6,424 feet and it was discovered that the gas sand is about 300 feet thick, extending to below 4,000 feet. Nothing developed below that and the No. 2 was plugged back to the sand producing in the No. 1 and completed there as a gas well, by the United Gas Co. which made a deal to develop the field.

Other New Fields

Down in the southwest corner of Brooks County Ed East brought in a gas well 25 miles or so from any production at 1,109 feet and gauging 23,000,000 feet. He has started the second test.

In the Pettus Area

Around the Pettus area in Bee County there were several new producing spots opened. Ten miles south and a little west of the Pettus Field Simms Oil Co. brought in the No. 1 Holzmark, gauging 56,000,000 feet of gas that carried considerable gasoline. Total depth is 3,552 feet, with sand at 3,542-48 feet and top of the Jackson formation at 2,885 feet.

Between the Simms well and the Pettus Field, about half way, Nichols Oil Co. during the closing days of 1929 brought in the No. 2 Hicks, a gas well at 2,000 feet. In May of 1930 the same company drilled the No. 3 Hicks near the No. 2 and carried it to 3,641 feet, completed as a 20,000,000-foot gas well and making some oil. Its oil production is being reported from month to month as averaging 25 bbls. and it is reported with the Pettus Field though in reality is six miles away from the nearest Pettus production.

The well that first attracted attention to the Pettus area was the Mission Drilling Co.'s No. 2 Ray which made a gas well a 2,890 feet good for 50,000,000 feet. It was drilled in 1929. Early in 1930 Houston Oil Co. on a Humble lease and drilling for gas brought in the No. 1 McKinney, a half mile or so south of the Mission Drilling Co.'s No. 2 Ray, and at 3,971 feet it swabbed about 700 bbls. of oil. Later oil was discovered in the Pettus townsite a mile and a half to the west and still later Cosden brought in his No. 1 McKinney another mile and a half west of the townsite. They are three separate and distinct pools but producing from sands at about the same depth. Grayburg Oil Co. drilled the No. 1 Kimbell seven miles southwest of Pettus and it was reported as a completion and an oil well. It averaged 30 bbls. a day for a time.

About a mile north of where Mission Drilling Co. brought in its No. 2 Ray a gas well at 2,890 feet, Wm. F. Morgan last year drilled the No. 1 Mrs. R. A. McKinney and at 3,680 feet brought in a 20,000,000-foot gas well. Recently Union Producing Co. drilled its No. 13 Ray 1,100 feet southeast of Morgan's gasser and at 3,683 feet brought in an oil well completed for about 450 bbls. daily and now connected with pipe line, making still another producing spot in that territory.

Amounting to nearly a new pool is the Frasher & Schoolfield No. 1 Bishop Duval Land Co. in northern Duval County and a mile and a half south of the Schoolfield-

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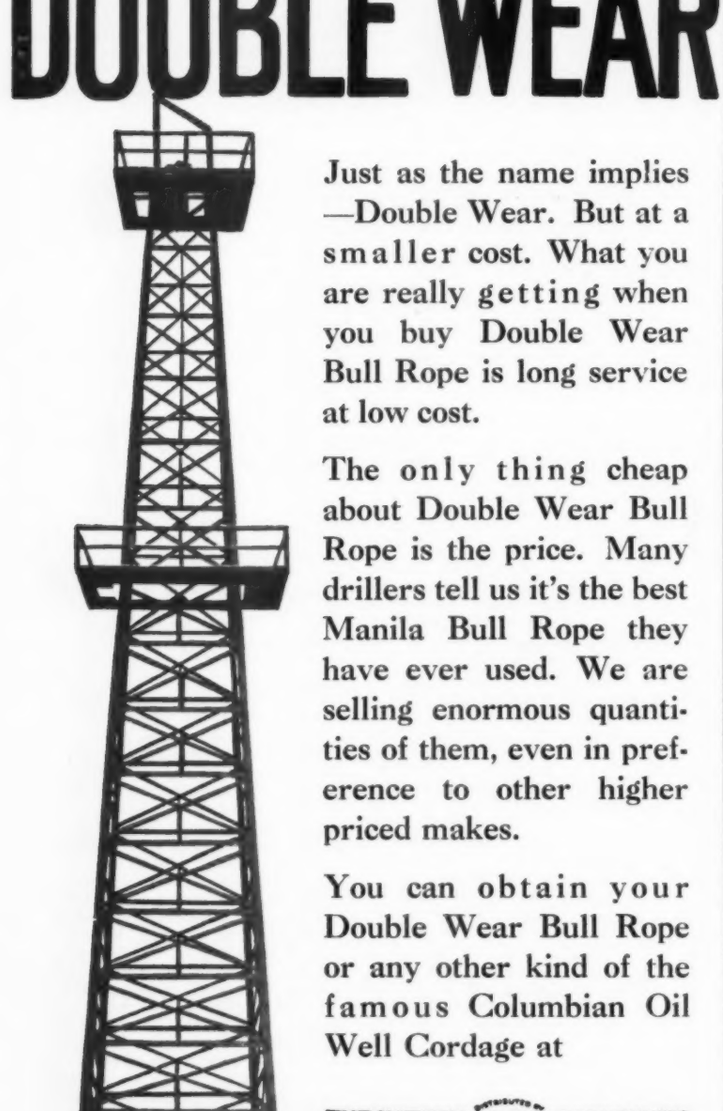

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O'Byrne pool. It was completed at 2,308 feet, in the same sand as is producing in the field to the north and came in for about 500 bbls. of oil a day.

SOUTHWEST TEXAS

Summary of Completions for the Year 1930

	Comp.	Prod.	Dry	Gas
Mirando	347	23,007	125	46
Darst Creek	275	318,747	45	..
Refugio	90	35,677	19	10
Buchanan	7	935	3	..
White Point	2	100	..	1
Kingsville	1	..	..	1
Saxet	6	249	2	3
Dobrowolski	15	124	1	3
Lytton Springs	3	13	1	..
Pettus	68	20,383	24	9
Cartwright	2	..	2	..
Bruner	12	14,800	..	..
Ina	1	5	..	..
Agua Dulce	5	10	3	1
Nursery	1	..	..	1
Lasater	3	..	1	2
Pettus-Goliad	2	..	2	..
Adams Gas	1	..	1	..
Chapman	46	12,090	15	..
Lion-McFadden	1	..	1	..
Unit Pool	1	..	1	..
Miscellaneous	304	4,253	266	18
Total, 1930	1,193	430,393	512	95

Completions by the Month

	Comp.	Prod.	Dry	Gas
January	89	33,109	34	20
February	85	58,925	27	3
March	102	45,312	44	8
April	98	87,239	36	4
May	108	69,781	53	3
June	63	22,472	28	5
July	102	16,691	40	7
August	186	26,311	84	16
September	84	13,836	39	8
October	124	34,116	50	7
November	73	11,593	40	7
December	79	11,008	37	7
Total, 1930	1,193	430,393	512	95
Total, 1929	1,136	187,144	472	143
Difference	57	243,249	40	48

KANSAS HAD GREAT REVIVAL IN PAST YEAR

(Continued from Page 124)

McPherson County is fast becoming an important source of supply with the total estimated potential placed at 250,000,000 feet a day from 14 wells. It was opened by the Shell Petroleum Corp. in 1929. The development has been confined to a small area. Its proximity to a market has been a factor in its rapid expansion. Practically all the extensions have been only one location in any direction from producing wells.

The Welch Pool

The Welch Pool in the southeastern part of McPherson County was extended in December by a new well drilled by Hipple and Rogers. It was the first attempt to extend production in the pool for some time. The well, No. 1 Rainey, NE cor. NW SE, Section 3-21-6w, swabbed 1,440 bbls. in 18 hours from the chat at 3,368-74 feet. It extended production a half mile south and it was believed to be as large as any yet found in the area. The Welch Pool was discovered in January, 1924, by the same operators. With few exceptions the wells have been much smaller and little development has been in progress in the area for some months.

The Schurr Pool

Development this year in the Schurr Pool in Rice County was slow practically all the work in the pool being in the first half of the year. The pool was without any pipe line outlet the greater part of the year. After five wells had been completed with a potential production of 7,000 bbls. a day the Independent Oil & Gas Co. built a 3-inch gathering line and a loading rack at Raymond, and handled 50 bbls. a day per well in May. After several months the company quit buying the oil and withdrew from the area. This left the pool again without any outlet. Several other wells were added and after several meetings a committee was appointed to petition the Prairie Pipe Line Co. to lay a pipe line into the area. The Prairie decided to build a line into the pool and in December it was completed and started running 50 bbls. a day from the 11 completed wells in the pool. It required about 40 miles of new pipe line to connect the pool with the company's main line. On January 1 the Prairie ceased running oil.

North of the Schurr Pool in Rice County especially the area along the Ellsworth-Barton Arch, a wildcat test opened a new producing area in the northwestern part of the county in July. The test was the Shell Petroleum Corp. and others' No. 1 Ploog, C SW SE, Section 33-18-9w. The well flowed 733 bbls. in 24 hours from the Silicious lime at 3,249-52 feet. It was drilled on a 10,000-acre block of unitized acreage, and was shut in awaiting a pipe line connection. The well is 12 miles from the nearest production. It was estimated to be good for 2,000 bbls. a day if swabbed.

Development of Eastborough

Sedgwick County was quiet during the first half of the year after being in the limelight the previous year. The county resumed its importance as an oil-producing area the last half of 1930. The area immediately adjoining Wichita to the east, in Sedgwick County, was discovered in 1929, and proved a disappointment. Production soon declined from the chat formation and after a few wells had been completed, the district became quiet until another well drilled on the Eastborough estates was completed for 1,500 bbls. a day. This was Fisher & Lauck's No. 1 in the SW cor. SE, Section 19-27-2. After making 1,500 bbls. a day it was pinched to 200 bbls. a day owing to the lack of pipe line facilities. Offsets were started and the area soon became one of the active pools in the last half of the year.

After several of the chat wells had been completed it was found they were making water and declining. The Vickers Petroleum Co. drilled deeper at its No. 1 Keys, NE cor. NW NE, Section 30-27-2, and found the Simpson sand productive, opening a new horizon for the district. The well swabbed 1,052 bbls. the first 24 hours from the pay at 3,338-42 feet.

At the close of the year the proven area of the pool was 4 miles long.

The largest well in the pool was the National Refining Co.'s No. 2 Murdock, SE cor., Section 18-27-2. It started swabbing at the rate of 2,600 bbls. a day from the chat formation at 2,938-60 feet.

New Pools in Greenwood

In February, the Prairie Oil & Gas Co.'s No. 1 Moran, a semiwildcat in Section 16-24-12, Greenwood County, made 75 bbls. a day from the Bartlesville sand at 1,578-1,603 feet. Another discovery well was the Derby Oil Co.'s No. 1 Beevers, NW cor. SW SE, Section 25-24-12. The well swabbed 100 bbls. of oil in 22 hours from the Bartlesville sand at 1,618-57 feet. It was located about 2½ miles southeast of the Prairie Oil & Gas Co.'s well and proved considerable territory for future development.

In March considerable activity resulted from a new well completed by the Syndicate Oil Corp in the Patterson Pool, in Section 6-24-12, Greenwood County, which made 240 bbls. of oil in 10 hours.

A new producing area was opened northwest of Augusta late in June by Sullivan & Melrose's No. 1 Gelwicks, NE cor. SW, Section 6-27-4, swabbing 85 bbls. of oil and considerable water from Simpson sand at 2,924-27 feet.

In Cowley County

A new producing area with production coming from the Bartlesville sand was found in July, 2 miles northwest of Burden in Cowley County. The well was Shell Petroleum Corp. and Lewis Production Co.'s No. 1 Headley, SE cor., Section 19-31-6. It was completed as a 150-bbl. well from the Bartlesville sand at 2,865-2,918 feet, total depth 2,923 feet. On making a production test the well first swabbed and flowed 85 bbls. in four hours and after being shot with 80 quarts it increased its flow.

Good Well in Ellsworth County

One of the important finds during the year was the Slick, Pryor & Lockhart's No. 1 Heihen, NW cor., Section 25-17-10w, Ellsworth County, in the western part of the State. The well opened a new producing area and was estimated at 2,000 bbls. a day. The pay was found in the Silicious lime at 3,212-43 feet. It was located 10 miles from the nearest production and was the first commercial producer in the county. It was shut in after the lease storage was filled in October on account of the owners being unable to get a pipe line connection.

Barton County

Northwestern Barton County gave in

dications of developing into an active area in the western part of the State during the coming year. The first well to find production in the county was the Prairie Oil & Gas Co.'s No. 1 Davidson, in Section 4-16-11w, a wildcat, completed for 200 bbls. of oil. It was the first commercial producer in the county. The pay was found in the Silicious lime at 3,332-40 feet. The well was shut in awaiting a pipe line connection.

Oil in Rooks County

Rooks County is now in the producing column and is the most northwesterly county in the State to produce oil. The first showing of oil was found in the wildcat test of Seeley & Boyson and others' No. 1 Silvers, C NE, Section 21-8-19w, Rooks County, in September in the Lansing lime at 3,200-06 feet, estimated at 50 bbls. a day. The well was drilled deeper and found another pay in the conglomerate at 3,370-3,440 feet, where it is estimated to be a 400-bbl. well. The nearest production was found in Ellis County approximately 20 miles away. The operators built a gathering line and a loading rack at Zurich, on the Union Pacific line and were starting to ship the crude oil in tank cars to the Spencer Petroleum Co. at Kansas City, Mo. The oil tested 26 degrees gravity corrected, and it is believed it was to be used for fuel without being put through a refinery.

Stafford in Oil Column

Stafford County was put in the oil column when Stanolind Oil & Gas Co.'s No. 36 Richardson, SE cor., Section 36-22-12w, started as a 200-bbl. well at 3,541-44 feet. The well is located southwest of Rice County and is believed to be on the same trend of folding as the Schurr-Raymond Pool, in Rice County, which has yielded some large producing wells.

Results in Russell County

In Russell County several interesting wildcat tests found oil, some opening new producing areas. Signal Oil Co.'s No. 1 Sellens, SE cor. NW, Section 12-15-13w, extended production about a mile. The well swabbed 250 bbls. in 12 hours from the conglomerate at 3,233-49 feet. The production of the wells in the Sellens Pool was around 300 bbls. a day and they were being curtailed by being operated under a curtailment plan of 12 hours per day.

The Lost Springs Pool in Marion County was extended during the year by the completion of R. E. Youker's No. 1 Riffel, NW cor. SW SW, Section 11-17-4. It swabbed 10 bbls. an hour from the chat at 2,320-71 feet. The well extended production in the pool a quarter of a mile north of the other producing wells, and was put on the pump.

The Lost Springs Pool was again extended in December by the completion of Harwood Oil Co.'s No. 1 Cowman, NW cor. NE SW, Section 11-17-4. The well made 80 bbls. a day on the pump from the chat at 2,342-44 feet. It was the second well to extend the production in the last few months.

Western Gas Development

As the result of two major trunk pipe line systems being constructed to the north and east during the year, the Hugoton gas field was particularly active in order to assure sufficient reserve gas to supply the additional demand for fuel. The demand is increasing as the lateral lines are being laid into new areas from the main trunk lines. The pipe line systems will supply communities in Kansas, Missouri, Iowa, Minnesota and Illinois.

During the year approximately 115 wells were completed for gas in the southwestern gas area of Kansas, including Stevens, Morton, Grant, Seward and Stanton Counties in Kansas, and Texas County in Oklahoma. The total estimated potential of the present completed wells was 600,000,000 feet of gas a day. During the year the gas area was extended into Grant County by McKenna and others' No. 1 Sullivan, NE cor., Section 12-29-38w, in December. The well made 3,500,000 feet of gas a day from sand at 2,540-2,715 feet. It extended the producing area about 15 miles to the north and was the first commercial producer in Grant County. The gas will be sold to the trunk pipe line system in eastern Colorado and western Kansas. The gas area spread to include approximately 50 square miles of territory during the year.

Approximately 85 gas wells were completed during the year in the Hugoton gas field. The Argus Production Co. completed the majority of these tests and is the largest holder of acreage in that field. The company owns about 365,000 acres in Stevens, Morton, Stanton, Grant and Haskell Counties in Kansas, and in Texas County Oklahoma.

Some predict the area may yield oil from the deeper formations and geologists report the possibility of finding oil at a depth of 6,000 feet to 7,000 feet. Tests are expected to be drilled to these horizons in the future.

KANSAS

Summary of Wells Completed in 1930 by Counties

County—	Comp.	Prod.	Dry	Gas
Butler	88	4,440	51	0
Chautauqua	17	275	8	5
Cowley	69	2,906	25	21
Lyon	12	40	10	0
Barton	3	250	2	0
Douglas	2	0	2	0
Leavenworth	1	0	1	0
Edwards	4	240	1	2
Elk	21	950	14	2
Chase	12	65	9	0
Barber	10	0	7	3
Dickinson	4	0	4	0
Hodgeman	1	0	1	0
Linn	1	0	1	0
Greenwood	143	12,918	46	4
Coffey	27	365	18	1
Rice	32	8,975	20	2
Clay	2	0	2	0
Franklin	3	0	1	2
Pawnee	3	0	3	0
Morton	26	0	0	26
McPherson	178	151,262	29	10
Ellsworth	3	359	2	0
Sumner	38	3,358	18	1
Kingman	3	0	3	0
Labette	1	0	1	0
Montgomery	4	5	2	1
Stafford	4	346	3	0
Sedgwick	97	35,974	37	1
Morris	7	0	4	3
Ellis	23	2,545	11	0
Marion	20	730	12	1
Marshall	1	0	1	0
Woodson	12	150	5	2
Stevens	78	0	1	77
Harvey	15	275	13	0
Reno	15	292	12	2
Osborne	2	0	2	0
Riley	3	0	3	0
Trego	4	0	4	0
Russell	21	1,236	9	0
Rush	7	0	6	1
Pratt	2	0	2	0
Saline	4	0	4	0
Smith	1	0	1	0
Shawnee	1	0	1	0
Washington	1	0	1	0
Graham	4	0	4	0
Rooks	4	340	2	0
Grant	1	0	0	1
Harper	1	0	1	0
Total	1,036	228,296	423	168

Summary by Months

Month—	Comp.	Prod.	Dry	Gas
January	64	8,610	42	5
February	59	8,774	27	8
March	93	17,500	44	8
April	85	15,609	33	4
May	108	53,295	34	6
June	105	25,592	37	16
July	70	14,938	32	1
August	101	16,404	35	27
September	117	11,799	46	35
October	111	17,150	45	29
November	53	16,939	20	12
December	70	21,686	28	17
Total 1930	1,036	228,296	423	168
Total 1929	1,058	165,611	453	52
Difference	22	62,685	30	116
1928	1,157	101,043	455	115
1927	1,333	98,253	569	79
1926	2,338	173,674	784	96
1925	2,003	207,880	636	86
1924	1,125	92,668	398	79

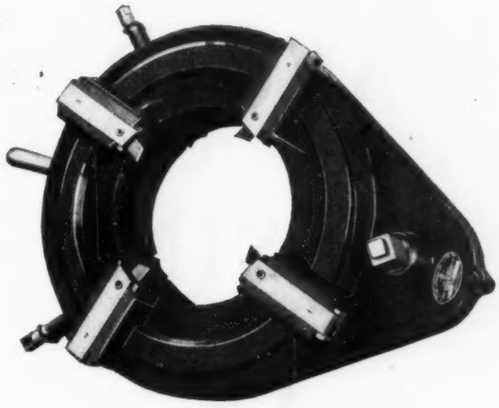
CENTRAL WEST FIELDS

(Continued from Page 27)

F. Stansell farm in Section 23, Washington Township.

Posey County—The test well drilled by Wilson and others on the Charles Manchette farm in Section 28, Harmony Township, was abandoned at 2,017 feet, after having passed through several oil and gas showings.

Spencer County—The Santa Fe Oil Co. is drilling No. 2 Marie Berg at 450 feet, in Section 2, Huff Township. Offsetting the first well on this farm, Liggott & Nelon have started No. 1 William F. Grass, but are delayed by a fishing job at 75 feet. One mile north, Hagedorn and others are starting Heubschman. Steffy & Grass have moved to a location



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in Section 2, same township, where they will drill No. 1 Gus Sauter.

Sullivan County—Fred Bays completed No. 1 M. B. Jewell in Section 29, Curry Township, at 570 feet, getting a gas well of 200 pounds pressure. James C. Ellis completed No. 1 Molly Stuck, in Section 33, Curry Township, a dry hole at 540 feet.

Vanderburg County—The test well drilled by the Vanderburg Oil Co. on the George Hornby farm in Section 32, north of Evansville, in Center Township, was a small producer, starting at 7 bbls. from a sand at 915-20 feet. This is the first commercial production of oil in the county, and will cause further testing.

Vigo County—James C. Ellis is drilling on the Clay Ladd (Riggs) farm in Section 31, Prairie Creek Township. The Ohio Oil Co. is drilling No. 2 Mabel Prevo in Section 32. In the same section, the Siosi Oil Corp. is starting No. 21 on the William Riggs (Lease 36-40). Same company completed the No. 2 Thomas and Williams in Section 32 at 2,219 feet, initial production 25 bbls.

Warrick County—The Indiana Southwestern Gas Corp. plugged its test on the J. T. McWilliams farm in Section 33, Hart Township, total depth 2,019 feet. W. C. McBride, Inc., abandoned the No. 1 Mary Mellen, which was drilled to 1,485 feet, in Section 35, same township.

WORK SLOWS UP IN CENTRAL WEST FIELDS

(Continued from Page 127)

wildcat acreage at a rapid clip and expect to do a lot of work during 1931.

CENTRAL WEST SUMMARY
Result of Field Operations in 1930 in Four Divisions

Field—	Comp.	Prod.	Dry	Gas	Old wells abd.
Lima	205	1,663	39	72	314
Central Ohio	1,129	14,888	342	440	0
Indiana	215	2,498	79	55	145
Illinois	204	3,042	84	3	128
Total 1930	1,753	22,091	544	570	587
Total 1929	2,157	33,033	582	646	504
Difference	404	10,942	38	76	83

LIMA FIELD
Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas	Old wells abd.
January	13	130	4	2	6
February	13	196	3	3	12
March	17	236	4	1	16
April	12	68	1	1	53
May	22	129	6	8	15
June	22	87	6	5	45
July	18	275	4	3	23
August	16	179	3	5	9
Septem er	25	62	3	15	19
October	16	124	1	8	31
November	20	177	3	11	33
December	11	0	1	10	52
Total 1930	205	1,663	39	72	314
Total 1929	191	3,717	40	25	258
Difference	14	2,054	1	47	56

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Old wells abd.
Wood	9	29	2	0	105
Hancock	21	540	3	3	36
Allen	14	342	0	0	12
Auglaize	6	18	3	0	7
Sandusky	19	53	4	7	79
Mercer	8	22	1	3	21
Van Wert	0	0	0	0	15
Seneca	45	222	19	10	24
Lucas	8	152	0	0	0
Ottawa	5	8	0	2	13
Shelby	4	30	1	0	2
Henry	2	30	0	1	0
Hardin	51	217	3	36	0
Huron	3	0	0	3	0
Logan	1	0	0	1	0
Wyandot	7	0	1	6	0
Crawford	2	0	2	0	0
Total 1930	205	1,663	39	72	314

INDIANA FIELD
Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas	Old wells abd.
January	17	114	2	8	4
February	11	257	7	2	15
March	16	461	3	5	3
April	11	252	5	1	22
May	21	266	9	2	5
June	24	391	9	3	29
July	21	182	11	4	7
August	16	87	8	4	2
September	23	109	10	5	13
October	25	113	6	11	20
November	18	146	6	5	11
December	12	120	3	5	16
Total 1930	215	2,498	79	55	145
Total 1929	181	1,828	78	36	117
Difference	34	670	1	19	28

(Continued on Next Page)

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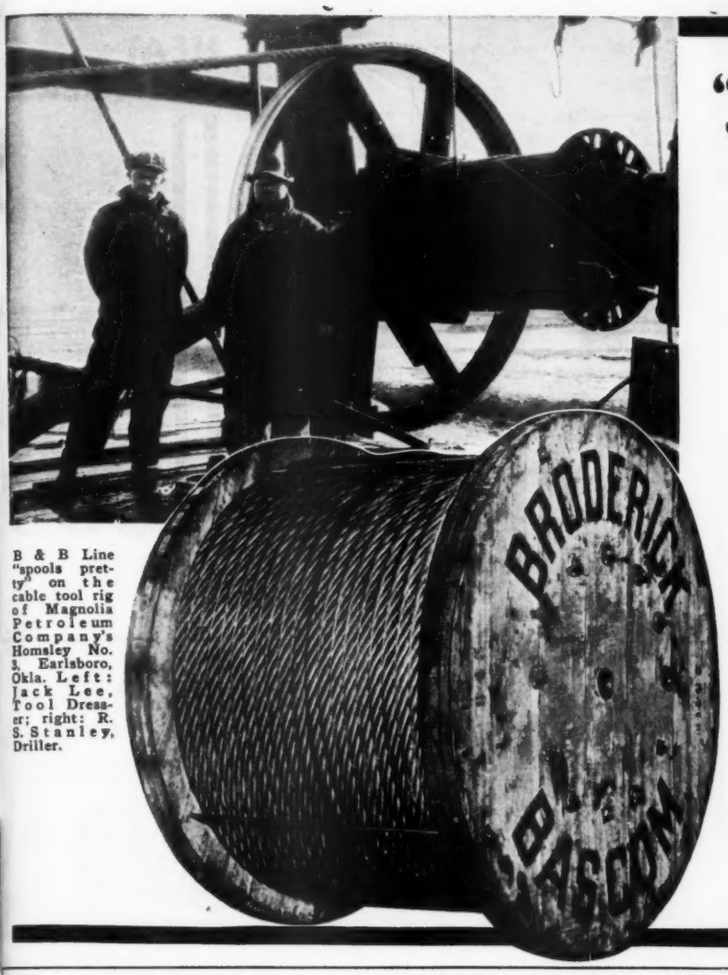

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Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Old wells abd.
Jay	6	72	1	1	5
Adams	5	35	2	0	6
Gibson	16	174	7	3	9
Pike	69	1,180	17	20	26
Daviess	9	30	4	2	2
Vigo	14	664	2	0	1
Sullivan	11	66	6	3	4
Spencer	13	193	7	0	0
Perry	21	65	8	3	0
Clay	1	0	1	0	0
Fountain	1	0	1	0	0
Harrison	4	0	0	4	0
Decatur	6	0	0	6	0
Hancock	4	0	0	4	0
Greene	1	0	1	0	0
Madison	1	0	0	1	0
Monroe	5	0	4	1	0
Grant	0	0	0	0	9
Crawford	2	0	1	1	0
Lake	1	0	1	0	0
Dubois	1	0	1	0	0
Huntington	2	0	1	2	27
Delaware	0	0	0	0	6
Steuben	1	2	0	0	0
Morgan	2	0	2	0	0
Floyd	4	0	4	0	0
Warrick	2	0	2	0	0
Johnson	1	0	1	0	0
Hamilton	2	15	1	0	0
Randolph	2	0	2	0	0
Knox	3	2	1	1	0
Marion	1	0	0	1	0
Vandeburg	1	0	0	1	0
Washington	1	0	1	0	0
Porter	1	0	0	1	0
Total	215	2,498	79	55	145

CENTRAL OHIO
Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas
January	94	879	25	39
February	82	1,488	26	32
March	80	1,317	19	33
April	96	1,663	26	41
May	111	2,130	35	38
June	119	1,711	27	51
July	81	1,280	22	34
August	112	1,172	35	45
September	85	767	24	35
October	110	1,054	39	37
November	88	760	35	31
December	71	677	29	24
Total 1930	1,129	14,888	342	440
Total 1929	1,382	11,465	377	583
Difference	253	3,423	35	143

Summary by Counties

County—	Comp.	Prod.	Dry	Gas
Ashland	127	259	52	39
Medina	91	673	29	22
Lorain	48	0	22	26
Wayne	50	54	17	31
Holmes	37	812	14	11
Ashtabula	10	0	6	4
Richland	13	0	8	5
Knox	59	196	19	31
Coshocton	30	678	5	12
Summitt	49	0	7	42
Licking	99	4,010	17	14
Muskingum	148	5,308	33	46
Athens	124	82	40	65
Meigs	33	45	12	12
Jackson	5	0	1	4
Vinton	16	18	4	4
Lawrence	3	0	1	2
Tuscarawas	46	1,096	8	24
Stark	25	0	9	16
Fairfield	19	6	10	8
Morrow	1	0	1	0
Guernsey	51	1,435	11	6
Belmont	28	85	8	15
Gallia	1	0	1	0
Harrison	4	9	1	0
Pike	2	0	1	1
Cuyahoga	6	17	2	1
Lake	1	0	1	0
Trumble	1	0	1	0
Carroll	1	5	0	0
Delaware	1	0	1	0
Total	1,129	14,888	342	440

ILLINOIS FIELD
Summary of Wells Completed in 1930

Month—	Comp.	Prod.	Dry	Gas	Old wells abd.
January	25	390	7	0	7
February	9	220	4	0	4
March	22	403	11	0	3
April	18	111	11	1	6
May	21	337	8	0	14
June	20	662	6	0	15
July	15	84	7	0	14
August	16	182	7	0	6
September	11	197	3	0	19
October	24	380	8	1	6
November	12	61	5	0	8
December	11	15	7	1	26
Total 1930	204	3,042	84	3	128
Total 1929	403	16,023	87	2	129
Difference	199	12,981	3	1	1

Summary by Counties

County—	Comp.	Prod.	Dry	Gas	Old wells abd.
Clark	7	7	4	0	0
Crawford	58	498	18	2	2
Lawrence	22	516	9	0	60
Wabash	33	459	13	1	12
St. Clair	57	1,516	23	0	37
Monroe	10	13	7	0	6
Madison	3	12	2	0	2
Randolph	2	0	2	0	0
Clinton	2	0	2	0	1
Jasper	1	0	1	0	0
McDonough	4	2	2	0	0
Edgar	1	1	0	0	0
Cumberland	2	1	1	0	0
Marion	2	16	0	0	14
Total	204	3,042	84	3	128

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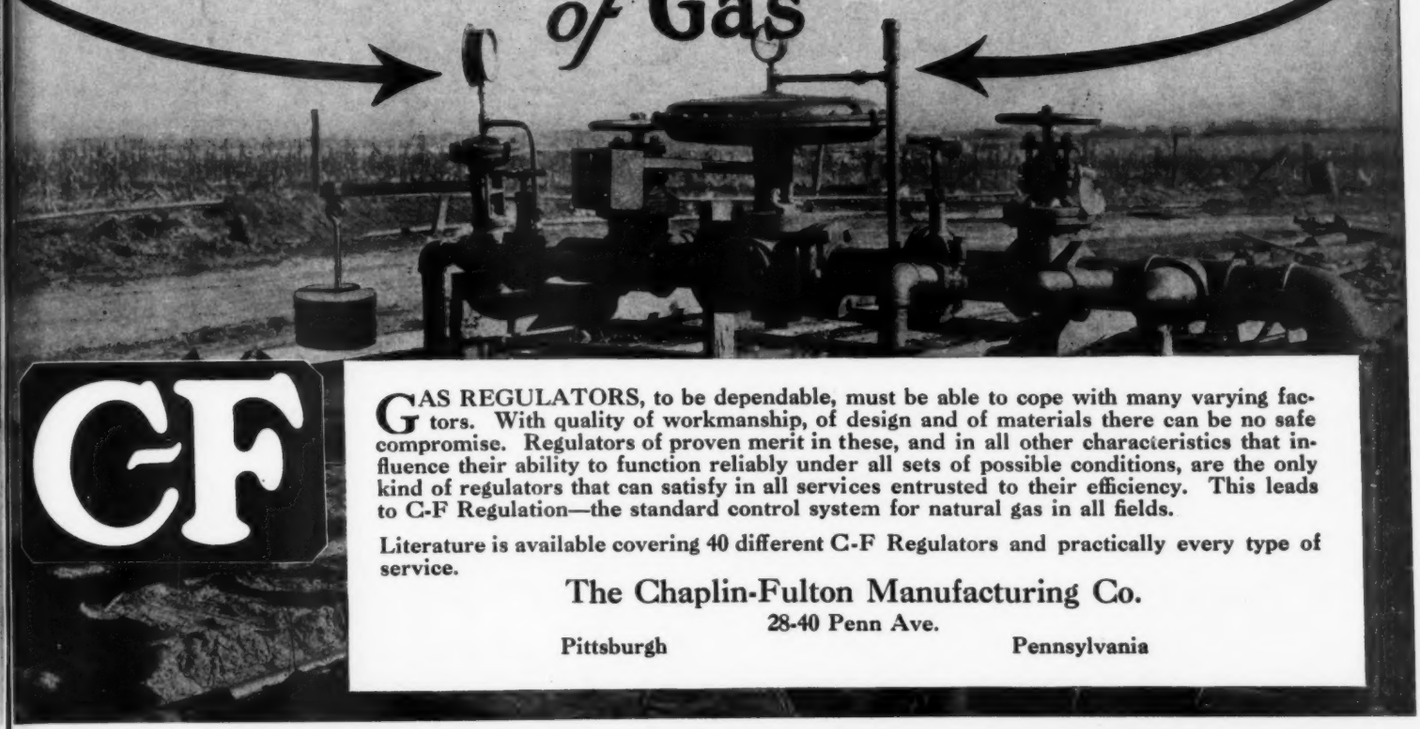

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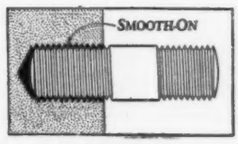

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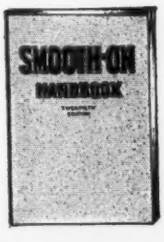

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Report for Month of November

RUNS

	Month. bbls.	Daily av. bbls.
Prairie P. L. Co.*	2,297,940	76,598
Gulf P. L. Co.	1,216,330	40,544
Texas P. L. Co.	638,943	21,298
Magnolia P. L. Co.	1,297,264	43,242
Empire P. L. Co.	1,441,080	48,036
Cosden P. L. Co.	676,137	22,538
Stanolind P. L. Co.*	2,970,000	99,000
Oklahoma P. L. Co.	2,308,496	76,950
Other lines	5,490,000	183,000
Total November	18,336,190	611,206
Total October	20,203,304	651,720
Difference	1,867,114	40,514

SHIPMENTS

Prairie P. L. Co.	2,651,866	88,396
Gulf P. L. Co.	1,152,592	38,420
Texas P. L. Co.	1,341,452	44,715
Magnolia P. L. Co.	1,224,581	40,819
Empire P. L. Co.	1,269,180	42,306
Cosden P. L. Co.	746,075	24,869
Stanolind P. L. Co.	3,074,429	102,481
Oklahoma P. L. Co.	2,201,217	73,374
Other lines	5,550,000	185,000
Total November	19,211,392	640,380
Total October	22,032,627	710,729
Difference	2,821,235	70,349

STOCKS

Prairie O. & G. Co.	38,073,000
Gulf P. L.-Gypsy Oil Co.	7,966,766
The Texas Company	3,479,044
Magnolia Petroleum Co.	5,757,775
Empire P. L. Co.	4,912,000
Mid-Continent Pet. Corp.	3,690,105
Stanolind Crude Oil Pur. Co.	19,493,000
Oklahoma P. L. Co.	2,895,457
Carter Oil Co.	9,885,555
Other lines	24,124,000
Total November	120,275,702
Total October	120,176,023
Difference	99,679

*Estimated. Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR DECEMBER
Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for November and December:

	Nov.,'30	Dec.,'30
Nat. Transit	104,496.10	110,146.31
S.W. Pa. P. L.	71,488.99	72,041.68
Eureka P. L.	272,972.79	289,000.11
Buckeye P. L. (Macksburg)	293,767.83	325,469.03
Buckeye P. L. (Cleveland)	9,244.34	11,757.62
Buckeye P. L. (Lima, etc.)	72,798.02	82,364.67
Indiana P. L.	3,171.88	3,342.37
Cumberland P. L.	157,587.04	178,692.00
N. Y. Transit	28,186.00	28,548.26
Tide Water P. L.	22,612.53	27,349.30
Pure Oil	190,625.17	204,537.02
Sioil Oil Ref.	27,202.39	14,378.02
Bradford Tran.	315,826.43	319,175.02
East Gulf Oil	.....	7,156.40
Total	1,569,979.51	1,673,984.81
Daily average	52,332.65	53,999.19

Note—Indian Refining Co. had other receipts of 265,208.78 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for November and December:

	Nov.,'30	Dec.,'30
Nat. Transit	402,823.28	418,614.12
S.W. Pa. P. L.	243,629.09	243,352.43
Eureka P. L.	192,900.15	268,939.44
Buckeye P. L. (Macksburg)	246,434.15	247,581.49
Buckeye P. L. (Cleveland)	1,949.80	1,464.51
Buckeye P. L. (Lima, etc.)	1,138,273.04	1,063,204.74
Indiana P. L.	360,294.63	287,189.39
Cumberland P. L.	96,581.63	129,255.52
Southern P. L.	34,921.19	27,773.80
N. Y. Transit	182,392.43	189,599.54
Northern P. L.	69,933.33	78,349.64
Tide Water P. L.	164,443.71	359,965.20
Pure Oil	295,355.25	69,124.29
Indian Ref.	269,600.16	280,245.79
Bradford Trans.	356,796.37	373,859.08
Tuscarora Oil	342,813.68	369,139.62
East Gulf Oil	.....	5,397.60
Total	4,399,141.89	4,413,056.40
Daily average	146,638.06	143,001.82

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of November and December:

	Nov., '30	Dec., '30
Nat. Transit	823,883.04	796,609.10
S. W. Pa. P. L.	432,055.87	444,175.42
Eureka P. L.	1,501,400.77	1,500,225.43
Buckeye P. L. (Macksburg)	547,588.35	643,952.78
Buckeye P. L. (Cleveland)	43,726.09	37,246.45
Buckeye P. L. (Lima, etc.)	4,622,221.25	4,424,779.87
Indiana P. L.	748,856.72	587,459.89
Cumberland P. L.	567,723.01	592,631.01
Southern P. L.	315,451.62	292,250.09
N. Y. Transit	126,550.60	140,232.95
Northern P. L.	508,980.54	515,798.08
Tidewater P. L.	976,186.74	1,049,178.91
Pure Oil	332,491.81	467,768.78
Indian Ref.	71,646.44	55,677.44
Tuscarora	16,477.12	15,325.72
Bradford Trans.	216,140.95	183,944.67
East Gulf	.....	4,695.81
Total	11,851,380.92	11,751,952.41
Decrease	586,174.95	99,428.51

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of November and December, showing gross stocks of the above fields:

	Nov., '30	Dec., '30
Pennsylvania	3,970,186.37	3,950,817.59
Lima	752,285.02	757,684.69
Kentucky	626,748.00	643,036.25
Mid-Continent	6,155,312.11	5,903,435.98
Illinois	24,171.92	40,169.01
Michigan	322,677.49	456,808.89
Total	11,851,380.92	11,751,952.41

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1927	1928	1929	1930
Jan.	56,209	52,904	51,749	75,907
Feb.	61,298	57,002	51,833	79,256
Mar.	63,247	57,485	54,252	76,688
April	60,927	56,812	58,444	84,536
May	60,284	62,067	59,902	80,548
June	62,757	58,230	58,833	75,430
July	58,674	57,144	66,087	68,921
Aug.	60,870	57,745	66,087	54,291
Sept.	60,285	53,487	67,315	56,595
Oct.	147,080	58,100	76,093	58,179
Nov.	57,275	53,865	74,831	52,332
Dec.	53,089	52,025	74,561	53,999

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1927	1928	1929	1930
Jan.	141,227	146,465	165,721	217,623
Feb.	138,534	167,368	159,387	224,355
Mar.	133,777	158,883	161,474	228,846
April	140,227	172,935	169,737	241,845
May	144,594	180,559	184,281	248,383
June	149,772	188,024	185,404	234,401
July	151,850	189,470	194,763	207,094
Aug.	188,653	192,853	184,946	205,506
Sept.	144,213	194,138	201,214	193,999
Oct.	147,036	176,000	191,367	157,675
Nov.	150,975	176,898	202,743	146
Dec.	144,504	173,572	186,257	143

Gross Stocks

In the following table will be found gross stocks of the various lines of Pennsylvania, Lima and Kentucky oil fie including oil received from other lines at close of each month for the past th years:

	1928	1929	193
Jan.	12,276,710	7,596,564	12,226
Feb.	12,180,419	8,738,835	12,991
Mar.	12,239,725	9,002,058	13,247
April	11,740,125	8,978,172	13,233
May	11,602,468	8,903,560	13,052
June	11,287,678	8,921,275	13,396
July	10,819,331	9,211,595	13,268
Aug.	10,236,743	9,440,643	13,047
Sept.	9,660,910	9,443,067	12,812
Oct.	9,229,709	9,441,101	12,437
Nov.	8,366,553	9,868,538	11,851
Dec.	7,539,555	11,253,953	11,751

The Illinois Field

The following table gives the report the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 31	2,097,628
Runs from wells	429,069
Other receipts	212,050
Regular deliveries	353,568
Other deliveries	232,421

The amount of Illinois oil run by Tidewater Pipe Co. in Decem er was 349.30 bbls. Deliveries were 10,151.21 bb Adding these figures to those of the Illin Pipe Line Co. makes the runs and deliver as follows:

	Runs	Deliver
1930—		
December	239,399.95	363,719
1929—		
February	517,320.17	503,387
March	728,319.67	586,049
April	515,374.27	654,297
May	608,981.60	673,812
June	568,454.70	818,845
July	611,106.79	828,159
August	625,351.99	746,425
September	582,457.66	669,947
October	622,302.83	558,558
November	565,108.75	427,084
December	548,924.41	489,368
1930—		
January	543,387.95	498,292
February	548,416.44	414,536
March	631,944.49	469,119
April	530,074.22	509,304
May	605,147.37	504,069
June	572,622.57	468,658
July	604,529.54	388,454
August	594,642.12	375,742
September	457,001.11	371,691
October	478,442.12	320,688
November	239,399.95	363,719

Tidewater Pipe Co., Ltd., also delivered December 95,661.64 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1929-30—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
December	12,968	.....	46,129	13,613	7,225	79,935	.....	.....	.....	.....	2,335	82,2
January	18,484	1,936	34,257	22,323	9,516	86,516	.....	.....	.....	.....	2,258	88,7
February	7,673	.....	24,714	14,321	5,000	51,714	.....	.....	.....	.....	2,607	54,3
March	10,548	3,065	28,871	8,774	22,484	73,742	.....	.....	.....	.....	805	74,5
April	7,767	.....	14,369	11,600	7,433	41,167	.....	.....	.....	.....	7,600	48,7
May	5,194	8,451	28,161	9,484	2,774	54,064	.....	.....	.....	.....	774	54,8
June	8,300	.....	33,933	20,767	2,333	65,333	.....	.....	.....	.....	2,400	67,7
July	17,355	7,774	43,419	23,839	6,452	98,839	.....	.....	.....	.....	4,645	103,4
August	7,418	8,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,7
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,7
October	2,516	3,065	27,258	16,419	4,903	54,161	.....	.....	.....	.....	5,355	59,5
November	8,367	6,233	33,800	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,5

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1929-30—	ATLANTIC PORTS: Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
December	29,774	15,387	133,742	31,000	23,775	233,678	5,548	16,484	6,613	1,774	30,419	264,0
January	21,161	10,678	134,581	38,677	43,806	248,903	4,322	6,453	.....	548	11,323	260,2
February	24,500	14,714	147,357	36,036	39,786	262,933	2,821	11,072	3,500	1,964	19,357	281,7
March	28,355	3,839	151,806	36,645	34,903	255,548	4,323	11,645	839	2,419	19,226	274,7
April	31,400	8,933	123,500	40,423	19,434	223,700	.....	7,400	2,423	4,167	14,000	237,7
May	24,129	9,322	174,194	39,291	28,226	275,161	8,194	11,548	2,935	1,323	24,000	299,1
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,367	2,167	1,333	25,300	283,6
July	42,097	9,548	154,968	37,935	36,032	280,580	5,678	9,161	2,097	2,387	19,323	299,9
August	39,032	4,484	145,613	33,355	25,097	247,581	8,419	9,323	8,548	3,000	29,290	276,8
September	38,867	8,533	150,933	34,500	25,567	258,400	6,433	12,234	.....	3,800	22,467	280,8
October	19,839	11,742	146,194	35,355	26,967	240,097	6,065	7,067	2,774	2,545	18,451	258,5
November	39,633	35,900	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,9

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS
(In Barrels of 42 gallons)

1929-30—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
December:	Month	21,705,554	20,092,876	25,609,823	3,549,066	1,917,071	1,878,352	2,378,754	4,168,100	81,299,5
	Daily average	700,179	648,156	818,394	114,486	61,841	60,592	76,734	134,455	2,622,5
January:	Month	21,983,242	20,802,984	25,284,352	3,273,197	1,817,685	1,780,969	2,151,090	4,216,000	81,309,5
	Daily average	709,137	671,064	815,624	105,587	58,635	57,451	69,390	136,000	2,622,8
February:	Month	20,885,660	17,977,624	23,314,637	2,965,704	1,608,376	1,738,425	2,027,984	3,780,000	74,298,4
	Daily average	745,916	642,058	832,668	105,918	57,442	62,087	72,429	135,000	2,653,5
March:	Month	19,699,979	19,112,306	25,503,880	3,504,395	1,817,871	1,943,093	2,337,028	4,231,500	78,149,2
	Daily average	635,483	616,526	822,679	113,045	58,641	62,680	75,388	136,500	2,520,9
April:	Month	18,768,743	19,541,310	24,799,768	3,734,253	1,724,460	1,909,552	2,334,810	4,134,000	76,946,8
	Daily average	625,625	651,377	826,658	124,475	57,482	63,652	77,827	137,800	2,564,8
May:	Month	19,044,444	20,587,503	26,214,068	3,978,385	1,659,895	1,914,290	2,565,219	4,402,000	80,365,8
	Daily average	614,337	664,113	845,615	128,335	53,545	61,751	82,749	142,000	2,592,4
June:	Month	18,020,795	19,754,900	25,643,705	3,765,060	1,704,060	1,923,621	2,519,190	3,880,000	77,211,3
	Daily average	600,693	658,490	854,791	125,503	56,802	64,187	83,973	129,300	2,573,7
July:	Month	18,802,024	18,032,514	25,910,929	3,541,409	1,713,680	2,079,769	3,275,894	3,844,000	77,200,2
	Daily average	606,517	581,694	835,835	114,239	55,280	67,089	105,674	124,000	2,490,3
August:	Month	18,770,466	17,255,034	25,538,513	3,491,530	1,700,102	2,151,120	3,193,341	3,417,000	75,517,1
	Daily average	605,499	556,614	823,823	112,630	54,842	69,391	103,011	110,226	2,436,6
September:	Month	17,984,306	16,509,120	23,640,726	3,405,510	1,583,280	2,008,060	3,239,010	3,396,000	71,766,0
	Daily average	599,477	550,304	788,023	113,517	52,776	66,935	107,967	113,200	2,392,1
October:	Month	18,344,053	16,632,523	23,878,035	3,571,913	1,636,552	2,142,885	3,225,550	3,627,000	72,958,5
	Daily average	591,743	536,533	770,259	115,223	52,792	69,125	104,050	117,000	2,353,5
November:	Month	18,109,859	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,957,100	3,222,000	68,420,0
	Daily average	603,648	498,059	734,506	115,311	51,929	71,231	98,570	107,400	2,280,6
Total 12 months		232,019,125	221,240,464	297,373,658	42,339,752	20,440,962	23,607,084	32,294,970	46,317,600	915,442,6

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